Exhibit A

Steven P, Feinstein, Ph.D

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF OHIO

EASTERN DIVISION

****

OHIO PUBLIC EMPLOYEES RETIREMENT
SYSTEM, on Behalf of Itself and
all Others Similarly Situated,

Plaintiff

vs. CA NO. 4:08-CV-00160

FEDERAL HOME LOAN MORTGAGE
CORPORATION, a/k/a FREDDIE MAC,
RICHARD F. SYRON,
PATRICIA L. COOK,
ANTHONY S. PISZEL and
EUGENE M. MC QUADE,

Defendants

****

VIDEOTAPED DEPOSITION OF:

STEVEN P. FEINSTEIN, PH.D.

MORGAN LEWIS

One Federal Street

Boston, Massachusetts

August 10, 2017 8:39 a.m.

Reported By: Darlene M. Coppola, RMR, CRR

Job No: 127062

Steven P, Feinstein, Ph.D

APPEARANCES:

Representing the Plaintiff:
MARKOVITS STOCK & DE MARCO
3825 Edwards Road
Cincinnati, OH 45209
BY: WILLIAM MARKOVITS, ESQUIRE

-and-

STRAUSS TROY CO., LPA
150 East Fourth Street
Cincinnati, OH 45202
BY: RICHARD WAYNE, ESQUIRE

Representing the Defendant Anthony Piszel:
MURPHY & MC GONIGLE
1185 Avenue of the Americas
New York, NY 10036
BY: JAMES GOLDFARB, ESQUIRE

(Continued on next page)

Steven P, Feinstein, Ph.D

APPEARANCES (Continued):

Representing the Defendant Federal Home Loan Mortgage Corporation a/k/a Freddie Mac:
MORGAN LEWIS & BROKIUS
One Federal Street
Boston, MA 02110
BY: JASON FRANK, ESQUIRE
LIZA HAYS, ESQUIRE
MICHAEL BLANCHARD, ESQUIRE
EMILY RENSHAW, ESQUIRE

Representing the Defendant Richard Syron:
SIDLEY AUSTIN
1501 K Street Northwest
Washington, DC 20005
BY: FRANK VOLPE, ESQUIRE

(Continued on next page)

Steven P, Feinstein, Ph.D

APPEARANCES (Continued):

Representing the Defendant Eugene McQuade:
DECHERT
Cira Centre
2929 Arch Street
Philadelphia, PA 19104
BY: CATHERINE WIGGLESWORTH, ESQUIRE

Representing the Defendant Patricia Cook:
ZUCKERMAN SPAEDER
1800 M Street Northwest
Washington, DC 20036
BY: ADAM FOTIADES, ESQUIRE

Also Present:
Howard Lindenberg, Freddie Mac
Nikolai Caswell, Navigant Consulting
David Marcus, Ph.D., Cornerstone Research
Crystal Strawbridge, Videographer

Steven P, Feinstein, Ph.D

INDEX

EXAMINATION

Witness Name	Page
Steven P. Feinstein, Ph.D.	
Direct By Mr. Frank	9

EXHIBITS

Exhibit	Description	Page
Exhibit No. 95	Declaration, Steven P. Feinstein, Ph.D.	Page 19
Exhibit No. 96	Report on Market Efficiency, June 7, 207	Page 55
Exhibit No. 97	Report on Market Efficiency, February 6, 2015	Page 122
Exhibit No. 98	Report on Market Efficiency, February 13, 2015	Page 125
Exhibit No. 99	Expert Report, Petrobras	Page 127
Exhibit No. 101	KBR Report	Page 128
Exhibit No. 102	Expert Report, World	Page 131

Steven P, Feinstein, Ph.D

Acceptance Corporation
Exhibit No. 103 Expert Report, Eletrobras
Page 133

Exhibit No. 100 Exhibit 7A - Petrobras ADR
Page 144
Regression Study

Exhibit No. 104 Freddie Mac Reports
Page 187

(Continued on next page)

INDEX
EXHIBITS

Exhibit Description
Page

No. 105 The"Less Than" Efficient
187
Capital Markets
Hypothesis: Requiring
More Proof from Plaintiffs
in Frand-o-theMarket Cases
No. 106 Applied Statistics for
188
Public Policy
No. 107 Probability and Statistics
224
for Engineering in the
Sciences

No. 108 Press Release
326
No. 109 NERA Manuscript
361

Steven P, Feinstein, Ph.D

THE VIDEOGRAPHER: This is the start of tape labeled No. 1 of the videotaped deposition of Dr. Steven Feinstein fine in the matter of Ohio Public Employees Retirement, et al. verus the Federal Home Loan Mortgage Corporation, et al., in the United States District Court, the Northern District of Ohio, Eastern Division, Civil Action No. 4:08-CV-00160.

This deposition is being held at One Federal Street, Boston, Massachusetts on August 10, 2017, at approximately 8:39 a.m.

My name is Crystal Strawbridge from TSG Reporting, Inc., and I am the legal video specialist. The court reporter is Darlene Coppola in association with TSG Reporting.

Will counsel please introduce yourselves.

MR. MARKOVITS: Bill Markovits on behalf of Markovits, Stock & DeMarco, on behalf of the plaintiff, Ohio Public Employees Retirement System.

MR. WAYNE: Rick Wayne,

Steven P, Feinstein, Ph.D

Strauss Troy, on behalf of plaintiffs.

MR. VOLPE: Frank Volpe, Sidley Austin on behalf Richard Syron.

MR. GOLDFARB: James Goldfarb from Murphy & McGonigle on behalf of Anthony Piszel.

MR. FOTIADES: Adam Fotiades, Zuckerman Spaeder, on behalf of Patricia Cook.

MS. WIGGLESWORTH: Catherine Wigglesworth, Dechert, LLP on behalf of Eugene McQuade.

MR. LINDENBERG: Howard Lindenberg on behalf of Freddie Mac.

MS. HAYS: Elizabeth Hays on behalf of Freddie Mac, Morgan Lewis.

MR. BLANCHARD: Michael Blanchard, Morgan Lewis, on behalf of Freddie Mac.

MR. FRANK: Good morning, everyone.

Jason Frank on behalf of Freddie Mac with Morgan Lewis.

MR. MARKOVITS: Can we have

Steven P, Feinstein, Ph.D

identification of the other people present?

MR. FRANK: Sure. They're nonlawyers here, and if they could put their presence on the record, that would be great.

DR. MARCUS: David Marcus from Cornerstone Research.

MR. CASWELL: Nikolai Caswell from Navigant Consulting.

STEVEN P. FEINSTEIN, PH.D., a witness called for examination by counsel for the Defendant Federal Home Loan Mortgage Corporation a/k/a Freddie Mac, having been satisfactorily identified by the production of his driver's license and being first duly sworn by the Notary Public, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. FRANK:

Q. Good morning, Dr. Feinstein.

A. Good morning.

MR. FRANK: Before we begin, counsel for the plaintiff and I will just put a few stipulations on the record, if that's all right.

THE WITNESS: Sure.

MR. FRANK: Very good.

Mr. Markovits, good morning.

MR. MARKOVITS: Good morning.

MR. FRANK: Can we agree that we'll reserve all objections except as to the form of the question and all motions to strike until the testimony is offered to the court?

MR. MARKOVITS: Yes.

MR. FRANK: And we're willing to agree that the witness can review and sign the transcript under the pains and penalties of perjury and that no formal signing before a court reporter is necessary.

Is that acceptable?

MR. MARKOVITS: Yes.

MR. FRANK: And we'd like to stipulate to the sufficiency of the notice

of the deposition and the subpoena that brings us here today, and the credentials of the court reporter and the videographer.

Is that acceptable?

MR. MARKOVITS: Yes. The sufficiency of the notice to the extent it is for today. As you know, we objected to any deposition beyond today.

MR. FRANK: We understand that there is an agreement to disagree with respect to the length of the deposition, and hopefully, the parties can work that out over the proceedings.

MR. MARKOVITS: Fair enough.

MR. FRANK: Very good.

BY MR. FRANK:

Q. Dr. Feinstein, you've been deposed many times before; is that fair to say?

A. Yes.

Q. You've been engaged as an expert by plaintiff shareholders in securities cases previously, correct?

A. Yes.

Q. And in connection with those

engagements, you've been deposed over 20 times?

A. Yes.

Q. Over 30 times?

A. Probably. Yes, yes.

Q. Over 40 times?

A. I don't have a specific count. There is a -- there's an exhibit in my report with the depositions I've given over the last four years, but we can count them if you like. I haven't.

Q. But that exhibit isn't complete insofar as it only identifies matters over the course of four years, correct?

A. Well, that's what it identifies. That's what it states it identifies.

So it doesn't include depositions prior to four years.

Q. Fair enough.

So it is incomplete in the sense that it's not a complete record of all of the matters in which you've worked. It's complete only insofar as it covers a four-year period?

A. Correct. But actually, there were three depositions since the date of the report. So it's incomplete in that sense as well. But also, it does not include, and it doesn't set out to include, the depositions prior to four years.

So you're right. There were more depositions earlier than four years prior to today.

Q. What are the matters in which you've been engaged, if any, that are not listed in the report post the finalization of the report?

A. You mean which cases?

Q. Yes.

A. Okay. ARCP, it's American Realty Capital Partners. It's a securities litigation. LSB, is another securities -- class action securities case. And the third one slips my mind. RSO, Resource -- Resource Capital.

Q. Are there any other matters that you would list in your -- in that disclosure if you were finalizing it today?

Page 14

Steven P, Feinstein, Ph.D

A. No.

Q. The only three that are omitted from the disclosure, because it simply -- they simply hadn't been -- they hadn't occurred yet are, ARCP, LSB, and RSO?

A. To the best of my recollection, yes.

Q. Now, in this matter, OPERS engaged you as its expert; is that correct?

A. Counsel for OPERS, yes.

Q. When did counsel for OPERS engage you as an expert?

A. I don't recall specifically. If I can see the -- my -- the date -- sometime last year in 2016. It was a couple of months before the date of the declaration that I submitted.

Q. You submitted a declaration in this case, correct?

A. Right, and that was in 2016.

Q. And it's -- to the best of your recollection, you were engaged two months prior to your signing that declaration?

A. Approximately, yes.

Q. Now, at some point after you were

Page 15

Steven P, Feinstein, Ph.D

engaged, were you assigned a task?

A. Yes.

Q. What was that task?

A. You mean after the first engagement -- when I was first engaged, I was asked questions about what had changed in recent years with respect to how economists would set out to prove or disprove or evaluate market efficiency and if anything in the profession or in the legal arena has changed that affects the methodology.

It's -- essentially, I was asked the questions that are listed as the scope in declaration that I submitted, and I was asked to write a declaration to that effect, memorializing my answer to those questions.

Q. At some point after you signed your declaration, were you asked to perform additional tasks?

A. Yes.

Q. What were those?

A. Well, actually, I do want to add

Page 16

Steven P, Feinstein, Ph.D

something to the earlier answer, which is I was also asked initially to review the reports of Dr. Hallman and Dr. Bajaj, and that was part of the engagement, the initial engagement, from which I produced the declaration.

Subsequent to submitting the declaration, I was asked to conduct my own evaluation of market efficiency for Freddie Mac stock and also opine as to whether or not a common damage methodology was available that could compute damages in a common method -- methodology for all class members.

Q. So prior to signing your declaration in this matter, you reviewed the Hallman report and Bajaj report from 2012; is that correct?

A. That's my recollection. I may be wrong, but that's, as I sit here now, what I recall.

Q. Now, you've written reports --

A. Actually, can I -- just to be sure and make sure I'm correct about that, can I

Page 17

Steven P, Feinstein, Ph.D

see the declaration and the -- can I see those documents?

Q. We'll be marking them soon and you'll have a chance to look at them, and if you need to correct anything, you'll have a chance.

A. Okay.

Q. You've written reports on market efficiency in other cases, correct?

A. Yes.

Q. In every one of those reports, you concluded that the security at issue traded in an efficient market; is that correct?

A. That's right.

Q. You have never written a report in which you concluded that the security at issue traded in a market that was not efficient, correct?

A. Well, I -- the specific answer to your question is, that is correct.

Although, I have reached a conclusion on a number of occasions that I would not be able to prove or opine that the stock traded in an efficient market.

Q. Now, you own a firm; is that correct?
A. That's right.
Q. What's the name of the firm?
A. Crowninshield Financial Research.
Q. And what is the corporate structure of that firm?
A. It's an S corporation.
Q. Now, have you been engaged by counsel for OPERS as an expert, or has your firm been engaged?
A. I think specifically the -- again, if I had the engagement letter in front of me, I could tell you for sure. But to the best of my recollection, without the document, the firm is engaged, but the engagement letter specifically says that I will be the lead expert and analyst on the case.
Q. And in addition to your own fees, fees from others at your firm are being charged in connection with this engagement; is that correct?
A. That's right.

Q. In total, including your own fees, how much has been billed to date?
A. I don't know. It's not one of the documents that I reviewed in preparation for today's deposition. Sometimes I review that, but in this case, I was reviewing other things.
Q. Can you estimate that more than $100,000 has been invoiced to date?
A. I think that's correct, as an approximation. I don't think it's much more than that.
Q. Now, are you the sole owner of the firm?
A. Yes, and that's written in my report.
Q. So in -- so all of the profits from this engagement go to you; is that correct?
A. Well, profits over costs, yes.

MR. FRANK: Let's mark this.

(Exhibit No. 95 marked for identification.)

BY MR. FRANK:
Q. Dr. Feinstein, I'm putting before you a document that has been marked as Exhibit 95.
What is Exhibit 95?
A. (Witness reviews document.)
This is the 2016 declaration that I described earlier.
Q. This is a declaration of Professor Steven P. Feinstein, Ph.D., CFA, dated December 16, 2016, correct?
A. Correct.
Q. And this is your signature that appears on page --
A. Eight.
Q. -- 8 of the document.
A. Yes.
Q. And you drafted this document; is that correct?
A. Yes.
Q. And you reviewed this document in preparation for coming here today, correct?

A. Yes.
Q. And to the best of your knowledge as you sit here today, everything in this Exhibit 95 is truthful; is that correct?
A. Yes.
Q. Now, after you signed this document, you were tasked with assessing the market efficiency of Freddie Mac's common stock over a particular period of time, correct?
A. That's right.
Q. And you're familiar with the factors set forth in the Cammer case, correct?
A. Of course.
Q. There are five factors, right?
A. Yes.
Q. And in connection with the fifth factor, you conducted two tests; is that correct?
A. That's correct.
Q. One of those tests was an event study and the other test was a z-test; is that correct?
A. Right. The z-test is a collective

Steven P, Feinstein, Ph.D

event study, actually, but it's a different type of event study.

Q. So you consider both of those tests to be forms of event studies?

A. Right. The first is the more traditional event study. The second is a type of event study, but it's not the traditional event study. It's also known -- by the way, it's also known as the FDT test for the authors who first wrote about it.

Q. What are the names of the authors who first wrote about it?

A. Ferrillo, Dunbar and Tabak.

Q. And you referenced their article in your declaration; is that correct?

A. Yes.

Q. And if I refer to -- and that article is specifically referenced in Footnote 5 of Exhibit 95, correct?

A. Yes.

Q. The name of the article is "The 'Less Than' Efficient Capital Market's Hypothesis: Requiring More Proof From

Steven P, Feinstein, Ph.D

Plaintiffs in Fraud on the Market Cases."

Do you see that?

A. I do.

Q. Did I read that correctly?

A. You did.

Q. And if I refer to that article as the FDT article, you'll know what I'm referring to, correct?

A. Yes.

Q. Now, what is an event study?

A. Oh, an event study is a type of economic -- financial economic analysis -- that has a number of components.

It isolates the -- what's called the residual return, which is a portion of a stock or a securities return that is controlled for market and peer effects, and then tests whether or not the residual return was of such magnitude that it would be extremely unlikely to observe that result had the return -- residual return been caused by random volatility alone.

And therefore, it's -- because of those features, it's a test that assesses

Steven P, Feinstein, Ph.D

whether or not information has caused the stock price to move on the date of the event.

So it's an analysis to determine whether or not information in the course of a particular event has caused the security price to move.

Q. And let me turn your attention to Paragraph 22 of your declaration. That's on Page 6.

On Paragraph 22, you describe a z-test as follows: You write, "One such test is a z-test that collectively compares the differential incidence of significant stock price movements across two groups of dates, where one group comprises dates with high information flow and the second group is composed of dates with less information flow."

Do you see that?

A. I do.

Q. Did I read that correctly?

A. Yes.

Q. Is that, as you sit here today,

Steven P, Feinstein, Ph.D

still an accurate description of what a z-test is?

A. Well, it's a description of the FDT test. The FDT test is -- uses the z-test.

The z-test is in statistics textbooks. It's a very old test for this purpose. The FDT test applies the z-test to the application of testing market efficiency and testing the impact of information.

But because the z-test is so essential and central to the FDT test, some people call the entire FDT test the z-test. And others refer to a z-test as being the statistical test that is a component of FDT test.

I just want to give a very complete answer so you understand the difference.

As I'm using the word "z-test" here, yes, I'm using the word "z-test" here to refer to the FDT test. And, therefore, yes, this is a correct and true statement.

Q. A z-test is a standard statistical

Steven P, Feinstein, Ph.D

test that has existed for many decades that compares the incidence of statistical significance across two populations; is that correct?

A. Right. The incidence of anything, really. It could be the incidence of statistical significance or the incidence of a cure from a medical treatment. But it's an incidence frequency test that compares whether the incidence of something in one sample is different from the incidence of that same thing in the other sample.

Q. And an FDT test is just a z-test as applied in the context of assessing market efficiency?

A. Yes.

Q. Now, when was a z-test first used in a securities case?

A. Quite some time ago. I think -- I think it goes back at least to PolyMedica. I think Dr. Dunbar used it in PolyMedica.

Q. When did you first use a z-test in a securities case?

Steven P, Feinstein, Ph.D

A. I'm not sure. I've used -- I developed a test similar to the z-test, very similar, but it's not exactly the z-test, and I've been using it for a few years.

My test used a binomial test, rather than the z-test, to test for the difference in -- a significant difference in frequencies of significance.

I also used a similar test that looked at -- compared price dynamics between two samples; a sample of news days versus a sample of non-news days.

But I can't tell you specifically. I would have to check my records to answer that question with precision. But a few years; several years.

I used it in Petrobras -- I used it in Petrobras, which goes back at least a couple of years now.

Q. And when you say you used it in Petrobras, are you saying that you used the FDT test in Petrobras, or that you used the test that you developed that was similar to

Steven P, Feinstein, Ph.D

the FDT test?

A. I'd have to look at my Petrobras report, but they're very similar. I consider them almost interchangeable.

Q. Did you use the FDT test in this case?

A. Yes, yes.

Q. Did you use your version of a z-test in this case or the FDT z-test?

A. I used the FDT test, both in this case and in Petrobras. I remember now for sure.

Q. Now, other than this case and Petrobras, have you used the FDT z-test in any other cases?

A. Yes.

Q. What are those cases?

A. Most of the cases in recent years.

Q. Can you name them for me?

A. Again, I would -- not with 100 percent precision, but with, essentially, an approximation based on my recollection. But if we look at Exhibit 2 to this declaration and look at the cases I've done

Steven P, Feinstein, Ph.D

since Petrobras, which is December 2015, I'm quite confident it's each of these: December 2015, January 2016, KBR, Symbol Technologies, and others as well. I just -- I would have to check my records to know for sure. But I have used it frequently.

Q. So on Exhibit 2 to Exhibit 95 as marked in this deposition, we see a listing of your testimony over the last four years, correct?

A. Yes.

Q. And if you turn to Page 22, we see that there's a -- in the middle of the page, there's "in re: Petrobras securities litigation."

Do you see that?

A. Yes.

Q. And there, it says Case No. 14CV-9662-JSR.

A. Yes.

Q. Do you see that?

A. Yes.

Q. And is it your understanding that

Steven P, Feinstein, Ph.D

the -- that at the beginning of the case, the number is an indication of the year in which the case was filed?

A. I think that's right.

Q. And so, this Petrobras is a case that was filed in the year 2014; is that right?

A. I'll take your word for it. I wouldn't know for sure.

Q. But what you do know for sure is that you gave deposition testimony in that case in October and December of 2015; is that right?

A. That's right.

Q. And then you gave testimony at an evidentiary hearing in December of 2015, correct?

A. That's right.

Q. And you list those facts here on Exhibit 2 of Deposition Exhibit 95, correct?

A. Right. Yes.

Q. Now, you recall that you used an FDT z-test in the Petrobras matter, correct?

Steven P, Feinstein, Ph.D

A. Yes.

Q. And that was a securities class action; is that right?

A. Yes. It was in the Petrobras case that the judge validated its use. And prior to that, there hadn't been as much court validation of the test.

Q. Now, in the Symbol Technologies case, you gave deposition testimony in January of 2016; is that right?

A. Right.

Q. And as you sit here today, it's your memory that you used the FDT z-test in the Symbol case, correct?

A. Right.

Q. And in the KBR matter, you gave deposition testimony in April of 2016; is that correct?

A. Right, and I just want to -- I'll -- yes, that's true.

I mean, I'm doing -- what's in those reports I'm reporting to you from memory. So I just want to caveat that my memory isn't perfect. I mean, I believe I used

Steven P, Feinstein, Ph.D

the test, but I would have to check the report to know for sure.

Q. So as you sit here today, it's your memory that you used the FDT z-test in the KBR matter?

A. I wouldn't say that exactly.

I would say it's a reasonable inference from what I know about from when I started using it, but I would have to check to see for sure.

Q. Is it fair to say that you're just not sure whether you used the FDT test in the KBR matter?

A. Yes, that's -- that's fair.

Q. Is it fair to say that as you sit here today, you're just not sure whether you used the FDT z-test in the Symbol Technologies matter?

A. I'm not 100 percent sure. That's correct.

I mean, I would be 100 percent sure if I had the documents in front of me to check it.

Q. Right. But you just don't know one

Steven P, Feinstein, Ph.D

way or another, as you sit here today, without looking at the document?

A. Not with 100 percent certainty. Generally, when I do any analysis or write reports, I have my sources at hand.

I don't like to rely only on my memory. But if you're asking that I do so, that's the best that I can do.

Q. Well, let's look at Groupon, which is the case where you gave deposition testimony in December of 2015.

Is it your memory that you didn't use the Z -- the FDT z-test in the Groupon matter?

A. I just don't recall one way or the other without the document.

Q. Now, in terms of the in re Petrobras matter that is the very last matter listed on Exhibit 2 of Deposition Exhibit 95, did you use an FDT z-test in that matter?

A. I just don't recall. I remember that was an opt-out case. So I know that they didn't need an opinion for purposes of the fraud-on-the-market reliance doctrine,

Steven P, Feinstein, Ph.D

but I do think I addressed market efficiency for other purposes. And I do believe my analysis was consistent with the analysis I had done for Petrobras earlier.

Q. But you just don't recall, as you sit here today, whether you used an FDT z-test or not?

A. If I -- if you show me the reports, I can tell you for sure, if I had the reports.

I mean, if you asked me any other time when I can look at my reports, that's what I would do is I would give you a definitive answer based on what's written down. But just from memory, it's -- you know, I'm reluctant to do so.

Q. Now, the ARCP case and the LSB case and the RSO case, those matters, did you use the FDT z-test in those matters? Do you know?

A. Or some variant of the collective test.

Q. What are variants of the collective tests?

Steven P, Feinstein, Ph.D

A. Well, like I said earlier, one test is, rather than using the formal statistical z-test, I test whether the incidence of statistical significance within the news sample is itself significant, is itself unlikely under an assumption of market inefficiency or only random volatility causing the stock price to move.

I would use a binomial distribution test. If we know that 5 percent of stock returns are -- appear to be significant, what's the likelihood under that -- so there's a 5 percent chance of significance, and a 95 percent chance of nonsignificance based on random volatility alone, what's the probability of, let's say, having four out of nine events being statistically significant given the binomial distribution?

So instead of using the z-test as the underlying statistical driver, I used the binomial test, which is legitimate. It's a variant.

Steven P, Feinstein, Ph.D

And the other one is -- another test is to test whether the dispersion of stock returns in the news sample is significantly different from the dispersion of stock returns in the non-news sample, based on either an F-test or an Ansari-Bradley, A-n-s-a-r-i, nonparametric test to determine whether the stock price dynamics in a news sample are different from the stock price dynamics in a non-news sample, which would prove that the market doesn't ignore information.

So those are variants built off the same underlying principle as the FDT test.

Q. In this case, you didn't use a binomial test right?

A. Correct.

Q. In this case, you didn't use a dispersion test?

A. Correct.

Q. In this case, you didn't use an F-test?

A. That's right, for good reason. And I can explain it.

Steven P, Feinstein, Ph.D

Q. In this case, you didn't use an Ansari-Bradley test?

A. Right.

Q. You used the FDT z-test?

A. That's right.

Q. And a more traditional event study as well?

A. Exactly.

Q. What is a binomial distribution?

A. Binomial distribution is -- well, the binomial model addresses events that either happen or don't happen, like a coin flip. You flip a coin, it's either going to be heads or tails. So it's -- binomial means there's two outcomes, two possible outcomes. When you flip a coin, it's either heads or tails. I guess within the realm of possibility, the coin can land on its edge, but we usually rule that out.

And then the binomial distribution is the statistics that characterize how likely it is to land on a head versus how likely it is to land on a tail; the coin.

With a coin, if it's a fair coin,

it's 50 percent one and 50 percent the other, and that's all there is to the distribution.
With the statistical significance of a stock return under the assumption of market inefficiency, every -- by design, every return would have a distribution of -- it would appear to be statistically significant. It would be in the 5 percent extreme; tails 5 percent of the time, thus heads as a 5 percent probability, and tails would be -- it's in the middle of the distribution away from the tails, 95 percent of the time.
Q. Are you familiar with an expression "normal distribution"?
A. Yes.
Q. What's a normal distribution?
A. That's the distribution where the histogram conforms to the bell-shaped curve that most of us are familiar with.
Q. So what's the difference between a binomial distribution and a normal distrubution?

A. Well, distribution is a continuous distribution. The range of outcomes is continuous.
Like, a return could be 0 or .1 or .2. It's in every point in between. A continuous range of outcomes is possible with a normal distribution.
The binomial distribution is discreet. There's only two outcomes, yes or no, heads or tails, significant or nonsignificant.
Q. Are there any statistical techniques that allow a statistician to adjust a binomial distribution to approximate a normal distribution?
A. Exactly the way you said it, no.
But I think I know what you're getting at.
In a repeated experiment, the binomial converges into -- the cumulative statistics of a binomial converge to normal under certain circumstances.
Q. And so that would require testing on a larger population for a binomial

distribution to approach the normal distribution?
A. Yes.
Q. And when --
A. A larger number of observations.
Q. And when a smaller number of observations are used -- strike that.
When a smaller number of observations are made, are there any statistical techniques that statisticians use to adjust for the fact that there are a smaller number of observations?
A. It depends on what the test is. It really depends on which test is being applied and the nature of the distributions under the null hypothesis. Sometimes it's necessary; sometimes it's not.
Q. What about in the context of an FDT z-test?
A. There are diagnostics that can be run to determine whether there's an impact of a relatively small population, something like the Fisher's exact test, which I did run and the diagnostic indicated there was

no problem.
But depending on the nature of the data and the null hypothesis and the sample size and the results, it may or may not be necessary.
I ran diagnostics and found it was not an issue in this case.
Q. What diagnostics did you run in this case?
A. Well, I did that one.
You mean in running the FDT test?
Q. Yes.
A. Well, I did -- I ran the test consistent with the way it was described in the literature. But I did run the Fisher's exact test to see if there was an issue with small sample, and there wasn't.
I can't recall others that were necessary.
Q. What literature are you referring to?
A. Well, two articles, one by Michael Hartzmark on the subject, and then one by the FDT original study, and then actually

Page 42

Steven P, Feinstein, Ph.D

textbooks on the z-test, in general, that I, over my career, relied on and learned from.

Q. Was it your intent to run an FDT z-test consistent with the methodology used by FDT in their article -- their FDT article?

A. Not entirely consistent. I thought there were some issues with their event selection methodology, so I refined that.

But the general framework is the same.

Q. Putting aside the issue of event selection, was it your intent to run the FDT z-test in this case using the same methodology that the FDT authors used in the FDT article?

A. No. I mean, I don't blindly follow their example. I run what I think is appropriate and defensible, and that's what I did here.

Q. Well, in what ways did your FDT z-test differ from the FDT z-test run by the FDT authors in the FDT article, putting

Page 43

Steven P, Feinstein, Ph.D

aside event selection?

A. I'd have to -- I don't think they differed in any material way.

Q. Are you aware of any immaterial ways in which they differed, putting aside event selection?

A. Again, just based on recollection but what I ran is appropriate and consistent with the statistics literature and defensible, given the null hypothesis and the sample size and the distribution. There may have been some issues with the diagnostic for small sample.

There may have been some issues with respect to bootstrapping, which I know that Michael Hartzmark paid some attention to, but I don't think either of those issues apply in any material way to this case.

Q. Now, you earlier testified that you ran the Fisher's exact test, which is a diagnostics test, in this matter; is that correct?

A. Right.

Q. Do you mention the Fisher's exact

Page 44

Steven P, Feinstein, Ph.D

test in your report?

A. No, because it was immaterial. I mean, it turned out to be irrelevant.

It's -- it was a check. It was a diagnostic. And it was -- it indicated no issues.

Q. Did you provide counsel for OPERS with any of your Fisher's exact test calculations?

A. I'm not sure. I may have run these tests -- these diagnostics subsequent to submitting the report, confirming what I originally knew, which is that it wasn't an issue here, in which case then it would not have been provided if it was run subsequent to the production.

Q. As you sit here today, do you know whether or not you ran the Fisher's exact test prior to or after the finalization of the report?

A. No, no. But I did run it, and I know it's not an issue.

Q. Well, what were the results of the Fisher's exact test?

Page 45

Steven P, Feinstein, Ph.D

A. The results that I observed are robust and well-founded in the results of the test.

Q. Well, is the Fisher's exact test a statistical test?

A. Yes.

Q. And does it yield numbers?

A. Yes.

Q. And those numbers -- what were those numbers?

A. I don't recall. I know that they were just not over the threshold to indicate any issue with sample size.

Q. Do you have a record of the tests -- the Fisher's exact test that you ran?

A. Yes.

Q. And did you run any other diagnostics tests, other than the Fisher's exact test in this case?

A. I probably ran the binomial test as well to see if four out of nine is statistically significant under a binomial distribution. I'm pretty sure I would do that. And confirmed that whichever

Steven P, Feinstein, Ph.D

statistical test was applied, the results would be the same.

Four out of nine is a very extreme result under the assumption that information is not causing the stock price to move, therefore, you can reject the assumption reasonably that information has no effect on the stock price.

Q. As you sit here today, do you know one way or another whether you actually ran the binomial test?

A. I'm quite sure I did, as a diagnostic check.

Q. And do you still have the results of that test?

A. Most likely. Possibly.

Q. And do you know what the numerical outcome of that test was?

A. I know the qualitative result, which is that the results are robust, that the result is confirmed. The conclusion I drew from the test is correct.

The specific test statistic and the P value, I don't recall that.

Steven P, Feinstein, Ph.D

Q. Do you know whether or not you ran the binomial test before or after you finalized and signed your report in this case?

A. I'm pretty sure I would have run that before.

Q. And you didn't provide the calculations that you ran in the binomial test to OPERS counsel; is that correct?

A. Well, I directed my staff to produce everything. But this is something -- I guess if you don't have it, then you don't have it. We could provide it.

Q. You didn't mention the binomial test in your report; is that correct?

A. No. It wasn't necessary. It's -- like I said, it's a diagnostic. It's a check to see if there's any issues with the report.

It's almost like proofreading to see if there's anything that needs to be considered. And nothing needed to be considered. Nothing additional needed to be considered.

Steven P, Feinstein, Ph.D

Q. Well, you discussed the binomial test in other expert reports that you've authored, correct?

A. Well, usually it's one or the other. Usually I would use the z-test or the binomial. They're conceptually similar; very similar.

Q. Have you ever, previously in a case, run both a z-test and a binomial test?

A. Again, you're asking me, from recollection, all of my prior reports.

I would guess that I did not, because they're so similar that it's not necessary to run them both.

But I can imagine that maybe sometime it may have been mentioned both times. But it's usually not necessary, and usually I would advise against it.

Q. Why is it -- strike that.

You've discussed the Fisher's exact test in prior reports, correct?

A. I may have.

Q. And in those --

A. I mean, usually, it would be in a

Steven P, Feinstein, Ph.D

rebuttal. If it's the kind of issue that a defense expert is concerned with -- and frankly, they should know that they shouldn't be concerned with it, given the degree of significance that these results have affiliated with -- but if it's something that they're concerned about, then in a rebuttal, I might say, all right, if you want to see the Fisher's exact test results and if you can't run them yourself, here they are.

It's not usually something I would present in an opening report because it's not hard to infer from the degree of significance of the results that it's not a problem.

That what the Fisher's exact test might identify as a problem is simply not a problem in this -- with these -- with these data.

Q. Is it your standard practice to run a Fisher's exact test in connection with conducting an FDT z-test?

A. Generally, only if there's some

Steven P, Feinstein, Ph.D

doubt; but not, generally, if there's no doubt.

Q. Now, what is -- what is the title of the Michael Hartzmark article that you referenced earlier, if you recall?

A. I don't know. I don't recall.

Q. Is it listed in your report or declaration? Do you know?

A. Well, it's not something I relied upon specifically for this report or for the declaration.

It's background literature supporting the use of the model.

(Witness reviews document.)

Let me see.

Q. I --

A. Yes, it's -- this document -- the declaration doesn't have a reviewed and relied upon list, so...

Q. Now, it's your memory that you tried to conduct your FDT z-test in this case consistent with the way that Dr. Hartzmark describes it in his article; is that fair to say?

Steven P, Feinstein, Ph.D

A. Well, not exactly. I mean, not exactly following their methodology step by step, but motivated in addressing the issues as in a manner that's consistent with what's in the literature.

Q. Now, you mentioned earlier issues of bootstrapping and issues of small samples.

Do you recall that?

A. You brought it up and I answered your questions, yes.

Q. I don't -- I don't believe I brought up bootstrapping. But regardless, no need to quibble.

What are issues of bootstrapping?

A. Bootstrapping is a way of testing empirically whether the distribution of the data conforms to what you -- what the assumptions of the distribution are in your testing algorithm.

Q. And did you do anything in this case to address or analyze issues of bootstrapping?

A. Again, what -- I'm not sure. I'm not sure.

Steven P, Feinstein, Ph.D

I mean, it's -- I have -- you know, I work with the staff, and we have general procedures to identify whether, you know, to do diagnostics on tests to see if there are any issues that need to be addressed.

It's a matter of course that we run diagnostics to see if there are no issues. No issues were brought to my attention. So I'm pretty sure that the general procedures were followed and that it was just not an issue that needed to be addressed.

Q. What are issues of small samples?

A. Sometimes -- usually the issue with small sample is that the power of the test is low; that the power of the test to reject a null hypothesis when the null hypothesis should be rejected, the probability of rejecting the hypothesis is low. So the test has low power because you're not the looking at enough data.

It just wasn't a problem here. With looking at all the data in the class period and the nine events in the collective event study, we know that the power of the test

Steven P, Feinstein, Ph.D

was powerful enough because there was a very strong rejection of the null hypothesis, that information doesn't move the stock price.

So just to hone in on and give you an answer specifically to your question, small sample issues are that the test may have low power because of the small sample, and you may get a nonrejection of a null hypothesis, not because the -- whether the hypothesis is true or false, but just the test itself is weak because of the small sample. That was not a problem here.

Q. In your declaration, you discuss a Brav and Heaton article about how event studies may sometimes have low power; is that correct?

A. That's right.

Q. And is it fair to say that the concerns raised in that article don't apply to this case because, in your view, the event study and the z-test you conducted here don't exhibit those -- that issue?

A. Yes, that's right.

Page 54

Steven P, Feinstein, Ph.D

Q. The low power issue is not an issue for the Freddie Mac case; fair to say?

A. That's what I concluded from the data and the statistical results.

Can we take a short break?

MR. FRANK: Sure.

THE VIDEOGRAPHER: We are off the record. The time is 9:27.

(Recess taken from 9:27 a.m. to 9:40 a.m.)

THE VIDEOGRAPHER: We are back on the record at 9:40.

BY MR. FRANK:

Q. Dr. Feinstein, is a Fisher's exact test an event study?

A. No.

Q. Is a binomial test an event study?

A. No.

Q. And --

A. It's a component of one version of the collective event study. But by itself,

Page 55

Steven P, Feinstein, Ph.D

it's not an event study.

Q. Is an Ansari-Bradley test an event study?

A. Again, it's a component of a variant of an event study, but in itself, it's not an event study.

Q. Is an F-test an event study?

A. Same answer.

Q. And for the binomial test, that's not itself an event study, it's a component of a variant of an event study; is that correct?

A. Exactly right.

MR. FRANK: Let's mark the report.

(Exhibit No. 96 marked for identification.)

BY MR. FRANK:

Q. Dr. Feinstein, I've put before you a document that's been marked as Exhibit 96.

What is Exhibit 96?

A. This is the report on market

Page 56

Steven P, Feinstein, Ph.D

efficiency that I submitted in this matter. It's a report on market efficiency, but it also includes a section on damages model.

Q. This is your report in this case, right?

A. Yes.

Q. And all of your opinions in this case are set forth in this report; is that fair to say?

A. Yes.

Q. You didn't leave any opinions that you have about market efficiency in this case out of the report, right?

A. Correct.

Q. And you didn't leave any opinions you have about how to construct a damages model out of this report; is that right?

MR. MARKOVITS: Objection.

A. Correct. Well, I hesitated for a moment because some of what we discussed this morning are opinions that I have that pertain to this case and are not in the report, things like that the results are robust enough such that certain diagnostics

Page 57

Steven P, Feinstein, Ph.D

can easily be inferred from the results.

I mean, that's an opinion. It's not -- it's what's explicated in the report, but it is an opinion I have and it relates to this case.

But the only reason I expressed it is because you asked questions about it.

BY MR. FRANK:

Q. Well, there's no -- if you were to testify in this case at trial about your opinions in this case, I would know in advance what your opinions are because they're set forth in this report, right?

A. Right. But as today you asked questions related to the report, related to the case that are not in the report, and I answered them.

So to the extent that that could happen, the -- to the extent that it happened today, I imagine it could happen again.

Q. So it's fair to say that --

MR. MARKOVITS: Can I object.

Can I just interrupt. I'm sorry to

Page 58

Steven P, Feinstein, Ph.D
interrupt.
MR. FRANK: Sure.
MR. MARKOVITS: I would like to object with regard to the testifying at trial, because the opinion he gives with regard to damages is with regard to the ability to determine damages on a class-wide basis.
Were he to testify at trial, he would have conducted a damage analysis by that time, and he would be testifying in that regard, not with regard to this opinion.
BY MR. FRANK:
Q. Is it fair to say that you have opinions about market efficiency -- about the market efficiency of Freddie Mac's stock that are not in this report?
A. As of this juncture right now, I do not have opinions about the efficiency of the market of Freddie Mac stock that are not in this report.
All the opinions I have about Freddie Mac common stock market efficiency

Page 59

Steven P, Feinstein, Ph.D
as of right now are in this report.
Q. Now, we've discussed that you performed two tests in connection with assessing the fifth factor of the Cammer case, right?
A. Yes.
Q. Okay. Now, which test did you perform first?
A. Oh, the single -- the single-event event study.
And by that, I mean that it's an event study focused on an event. In this case, there's a single event.
Q. And now, prior to performing the single-event event study, you reviewed Dr. Hallman's report dated August 16, 2012, correct?
A. Yes.
Q. And to the best of your recollection, you reviewed that report when?
A. Sometime within the month or two before December 16, 2016.
Q. Prior to performing the single-event

Page 60

Steven P, Feinstein, Ph.D
event study, you reviewed Dr. Bajaj's report dated December 14, 2012, correct?
A. That's right.
Q. That was approximately within the month or two before December 16 of 2016, right?
A. (Witness reviews document.)
Yes.
Q. Now, you were aware that Dr. Hallman conducted an event study also, correct?
A. Yes.
Q. You were aware that Dr. Hallman conducted an event study based on the testing of dates that Freddie Mac released earnings results, right?
A. That's right.
Q. That's a common way to conduct an event study, isn't it?
A. Not always. Sometimes it's well-motivated and sometimes it isn't.
Q. Well, putting aside the motivations, is it --
A. I mean -- what I mean is sometimes it's supportable as the rule to how to

Page 61

Steven P, Feinstein, Ph.D
select the events for single-event event studies, and sometimes it's not.
Q. Dr. Feinstein, you have -- let's back up for a second.
There's a couple of phases associated with conducting an event study, correct?
A. Yes.
Q. Or steps, so to speak, right?
A. Right.
Q. What's the first step?
A. Well, I mean, certain steps can be done in various orders. But initially, you gather the data and you run a market model to assess what the residual returns are, which is what are the returns after controlling for market and sector effect.
Actually, my first step is I read the news articles and the analyst reports to get a sense of what the company is, and what the company's about, and what kind of information is -- or what kind of events and news occurred over the life of the -- in the life of the company over the period

Steven P, Feinstein, Ph.D

of time at issue.

That's my first step.

But then construction of the regression model, and then selection of events.

Q. Now, before you construct the regression model or select events, you do some reading; is that correct?

A. That's right.

Q. And among other things, you just testified that you read analyst reports and newspaper articles; is that right?

A. That's right.

Q. And all of the analyst reports and newspaper articles that you read are identified in your report; is that correct?

A. Yes. Right.

Q. Now, you read other things in addition to analyst reports and newspaper articles, right?

A. That's right.

Q. For example, you read the operative complaint in this matter, which I believe

Steven P, Feinstein, Ph.D

is the third amended complaint; is that right?

A. Yes.

Q. You read that before you took any other steps in connection with your event study, right?

A. That's right.

Q. What else in addition to the complaint, analyst reports, newspaper articles, the reports of Dr. Bajaj and Dr. Hallman did you read before doing anything else in connection with your event study?

A. Company press releases and conference call transcripts.

Q. Those are all listed in your report as well?

A. Right.

Q. Anything else that you reviewed?

A. I think that's it.

Q. The next step is that you construct a regression model; is that right?

A. Actually -- actually, no.

The next step is selection of events

Steven P, Feinstein, Ph.D

to determine what events ought to be tested, what events in the life of the company over the course of the analysis period would be good candidates for an event study, based on the news and based on valuation principles.

Q. Dr. Hallman, when he conducted an event study, he selected six dates; is that right?

A. Can I see the Hallman report? I thought it was -- no, that sounds about right. Right.

Q. You recall that he selected dates based on the fact that those were dates on which Freddie Mac released earnings results, right?

A. Right.

Q. And in the past, you have selected dates based on that same criteria, the announcement of earnings results, correct?

A. Yes and no. Let me be clear about this.

For a collective event study, it's

Steven P, Feinstein, Ph.D

often a good selection criterion to take all event studies and to analyze the group collectively because, generally, earnings announcement dates have a greater flow of information than nonearnings announcement dates.

So I have frequently used whether or not a date is an earnings announcement date as the criterion for forming a bucket of events which are the high information flow events against which to compare all other events.

The other times that I would use earnings announcement -- so that would be -- that's when I would use the earnings announcement dates without an in-depth analysis of the news content on earnings announcement dates.

The other times I would use earnings announcement dates is I would read earnings announcement date news report, the press report, the news report, analyst commentary, to see if, in fact, it was indisputably a date on which very positive

Page 66

Steven P, Feinstein, Ph.D

or very negative news that arrived to the marketplace in a manner that reasonably would elicit a statistically significant stock price return, making it, therefore, a good candidate for a single-event event study.

So I wouldn't select events the way that Dr. Hallman did, which is to pick all earnings announcement dates without any eye towards what information came out on those dates for use in a single-event event study.

By single-event event study, I mean an event study focused each time it's run on a single event.

Q. Well, let me break that down a little bit, in part because I think you actually misspoke, and I want your testimony to be what you actually believe.

You said, for a collective event study, it's often a good selection criteria to take all event studies and to analyze the group collectively because -- and then you went on.

Page 67

Steven P, Feinstein, Ph.D

A. I meant earnings announcements. To take all earnings announcements and use all earnings announcements as the group of high information flow events.

And if you do that, you don't need to examine each earnings announcement to determine whether there was unconfounded, highly material, highly impactful information that came out on each of those days.

You would just -- you select them and keep them isolated in a group because you know that, in general, earnings announcement dates have -- on average, have a higher information flow than nonearnings announcement dates.

So yes, you're right, I misspoke. I meant earnings announcements.

But that's not what Dr. Hallman did, and that's not what I did either.

Q. What do you mean by "dates with higher information flow"?

A. Well, the literature says that earnings announcement dates are dates in

Page 68

Steven P, Feinstein, Ph.D

which the company speaks to the marketplace.

So compared to a more typical day, it's day in which more information is going to be arriving to the marketplace -- more information about the company is likely to be arriving to the marketplace about the company.

And if the dynamics of the stock price on those high information flow dates is different from the dynamics on more typical low information flow dates, that proves that information matters, which is informational efficiency, which is what the courts care about in cases like this.

Q. Now, at some point in time, did you determine that you wanted to do an event study based on a single date?

A. Well, I set out to do what we call single-event event studies. I looked for ideal candidates to use or appropriate candidate events to use for the traditional event study.

And because of the nature of this

Page 69

Steven P, Feinstein, Ph.D

case, I found one such event.

Q. When did you decide to do a single-event event study?

A. When I took the case.

Q. Now --

A. It's the -- the traditional event study is an important component of a market efficiency analysis.

Q. What other cases -- strike that.

In what other cases have you conducted a single-event event study?

A. I mean, there has to be good reason not to, but in most other cases I have.

In Petrobras, I didn't. And I explained in the Petrobras case why I didn't and used a collective test instead.

But when I can, I do it. And it's not -- what I mean by when I can is, I don't get to choose the history of the company. I don't get to choose what announcements the company made. I have to deal with the history of the company as it is.

So if the history of the company and

Steven P, Feinstein, Ph.D

the nature of its events make it possible and appropriate to do a single -- you know, either one or a series of single-event event studies, I'll run them.

Q. Did you do a single-event event study in the CVS Caremark case?

A. Can I see the report, please?

Q. You don't remember offhand?

A. Correct.

Q. Do you know whether or not you did a single-event event study in the JP Morgan case?

A. I see that you have the reports there. If you show me, I can answer the question definitely.

Q. Well, I'll been honest. I'm not trying to play games. We may mark these. I'm hoping -- I'd love to do them faster than slower, because I know you prefer this whole process to go faster than slower.

So if you don't remember, you can say that you don't remember. It's okay. We may get to them.

A. Well, I know that in Petrobras, I

Steven P, Feinstein, Ph.D

ran exclusively the collective event test, which is why the judge focused on that.

And in the vast majority, if not all other cases, I have run the traditional event study focused on individual events.

Q. So is it your view that you, in the vast majority of cases, have run single-event event studies?

A. Yes, and perhaps also the collective test.

Q. And when you -- what do you mean when you say "single-event event study"?

A. The traditional event study where I focus -- each time the methodology is run, it's focusing on the statistical significance of a -- the stock return that occurred in response or that occurred at the -- on the day of a single event.

Q. Did Dr. Hallman run a single-event event study?

A. Yes, he did. He ran a series of them.

Q. I see. He ran a -- so he tested six dates, correct?

Steven P, Feinstein, Ph.D

A. Right.

Q. And you called those single-event event studies because he ran a series of six single-event event studies; is that correct?

A. That's right.

Q. Okay. All right. So let's just get on the same page.

You, in this case, for your event study as opposed to your z-test, you didn't run a series of single-event event studies, correct?

A. Oh, I ran one.

Q. You ran one?

A. That's right, because I found one appropriate event candidate.

Q. And in how many other cases have you run an event study based solely on one date without testing other dates?

A. Well, in this one, I did test other dates. I tested the other dates by also running the collective event study.

Q. Well, let's -- I don't want to --

A. So you said "other," and that's --

Steven P, Feinstein, Ph.D

Q. Right.

A. -- an improper choice of words, because I didn't do that in this case. I --

Q. Let's just be clear.

You ran a z-test that was predicated on nine dates, right?

A. That examined information flow dates versus noninformation flow dates, and the information flow dates comprised nine dates.

Q. Let's put the z-test aside.

A. Okay.

Q. Let's talk about the event study that you ran.

A. Let's call that the traditional event study.

Q. Well, I'm not sure it's a traditional event study. So why don't we call it the November 20 event study.

Is that acceptable?

A. Sure.

Q. Because you ran that event study on the date November 20, 2007?

Steven P, Feinstein, Ph.D

A. Right.

Q. Fair enough?

A. Right.

Q. So the November 20 event study, that was an event study that was run on only one date, right?

A. Well, traditional event studies always run on one date. You might run a series of traditional event studies, but each time it will be on one date.

Q. In other cases, you have run a series of event studies; is that correct?

A. If the history of the company is such that there are more appropriate -- there are additional appropriate candidates, then I use all appropriate candidates.

In this case, I found one appropriate candidate.

So in Petrobras, there were, essentially, zero for the traditional event study. So I ran zero single-event event studies there.

And in Groupon, I think there may

Steven P, Feinstein, Ph.D

have been three over the course of the class period.

In this one, I found one.

Q. In some cases, there's zero appropriate dates to test, in your view, right?

A. For a traditional event study, yes.

Q. In other cases, there are multiple dates to test; is that correct?

A. That's right.

Q. And in other cases, you have tested multiple dates, correct?

A. Yes.

Q. In this case, you tested only one date for your November 20 event study, correct?

A. That's right.

Q. Have you ever, in any other case, run an event study that tested only a single date?

A. Well, like I said, Petrobras, it was zero.

I don't recall. I think it's not likely, but I don't recall for sure.

Steven P, Feinstein, Ph.D

But if there's only one appropriate date to test, that's dictated by the history of the company, not by my choices.

Q. How do you determine what is an appropriate date to test?

A. Well, I have a section in the report about that.

Let me draw your attention to it.

(Witness reviews document.)

Paragraph 115. Well...

I look for dates that, based on the nature of the news and based on evaluation principles, there was news that transpired that reasonably was of such magnitude, such importance, arriving in an unconflicted or unconfounded manner such that the arrival of that news would reasonably elicit a statistically significant stock price reaction.

Only because I exantide determined that it would reasonably elicit a statistically significant stock price reaction does it then make sense to test if it did elicit a statistically significant

Steven P, Feinstein, Ph.D

reaction, because if, based on the news or evaluation principles, you would expect the stock price not to move, then observing it later not to move doesn't either prove or disprove market efficiency.

What you would need to assess market efficiency is an event that should move the market, and then you observe to see whether it did or did not move the market.

That's how you test market efficiency.

So the selection criterion -- the selection criteria are to look for events that -- where the news is important and arrived in a manner that was somewhat, you know, not mixed, somewhat unconflicted and unconfounded, such that, according to valuation principles, it should move the market a large amount over the threshold for statistical significance.

Q. In other cases, you've selected earnings dates as appropriate dates to test in your event study, correct?

A. If and only if the news on the

Steven P, Feinstein, Ph.D

earnings date fit those criteria that I just explained.

Q. Now, in this case, did you seek to determine whether there was more than one date that might be appropriate to test?

A. I did.

Q. And you ultimately concluded that there was -- that in the 330-day class period, there was not a single other date that was appropriate to test?

A. That was my conclusion. I mean, to test in the traditional event study manner.

There were lots of dates, as I did ultimately examine, that could be tested in the collective manner.

Q. Now, how is the criterion for choosing dates in what you call the traditional event study different from the criteria for choosing dates in the FDT z-test?

A. So for the traditional event study, you've got to do an in-depth news analysis on the event itself to determine what news came out and whether that news arrived in a

Steven P, Feinstein, Ph.D

straightforward, unconfounded, unconflicted manner or whether it was mixed, and whether the news was of such importance relative, you know, on the basis of evaluation principles that it should move the market.

For the FDT test, all you need is a -- it's a more objective selection -- set of selection criteria. You need a rule, an objective rule that's replicable that identifies dates on which there was substantially higher news flow of any kind without an eye towards whether each individual date -- whether the news on each individual date itself was enough to move the market price an amount above the threshold for statistical significance.

The rule for the FDT test is a rule that -- you pick a rule that's objective and replicable that identifies higher news flow days.

Q. Is it fair to say that your selection of dates for the November 20 event study was not objective and replicable?

Steven P, Feinstein, Ph.D

A. I think it was. I think it's unfair to say it was not objective and replicable.

I think no reasonable person would look at the news that came out on November 20 and say that that wasn't a red-letter date in the life of this company, on the basis of evaluation principles and on the basis of the news that came out, regardless of whatever other events, such as a lawsuit or a complaint or other people's reports, came out.

I think anybody coming into this -- studying this company, studying this case, regardless of what they did or did not read, would agree that November 20 was an appropriate date for an event study because it was momentous news that, according to evaluation principles, should have moved the stock market -- the stock -- the market for that company's stock.

Q. What about the other 329 days in the class period?

Was your decision not to select any of those days objective and replicable?

Steven P, Feinstein, Ph.D

A. Absolutely. I'm waiting to see what your experts come up with. If they say other dates should have been tested, I'll evaluate that. If I think they're right, I'll take that into account.

But I don't think they'll find other dates that should have been tested.

Q. Well --

A. The nature of this company -- the nature of Freddie Mac, the nature of the period in which we're talking about was somewhat unique and caused it to not have dates that -- event dates that were such that would be ideal for a market efficiency event study.

It did have dates that were ideal for a collective event study, but I'm eager to see what they come up with so that I can evaluate whether they're right or wrong. I think they'll be wrong if they think there are other dates besides what I found.

Q. What is it about the nature of Freddie Mac that was unique that caused it to not to have event dates that were ideal

Steven P, Feinstein, Ph.D

for a market efficiency event study?

A. People saw it as a bastion of safety in a turbulent market.

Over this period of time, the housing market was increasingly risky. Other companies were -- they were suffering as a result of that riskiness and that turbulence in the marketplace. And people saw the government-sponsored enterprises as being more secure, safer, a bastion of safety.

So, in fact, like the riskier the rest of the market got, the safer by comparison Freddie Mac looked.

That's essentially it.

It was a fortress is the way it was perceived, it's a fortress is the way the company portrayed itself.

Just read the complaint, and I did and I know you did, too, but cross-reference it with the primary sources. Over and over again you have the executives of the company saying that they weren't facing the same kind of risks that

Steven P, Feinstein, Ph.D

other companies were facing and that they had adequate analysis to analyze laws and -- loans and detect fraud, and that they had adequate capital.

It's on the marketplace. And that's why it made the company much more stable than other companies at that time.

Q. So is it fair to say that in your decision not to test dates other than November 20, 2007 in what you call your traditional event study, you were relying in part upon the allegations in the complaint?

A. No. That's -- that misinterprets what I just said.

I said that you can -- one easy place to consolidate the quotes that I'm referring to would be to look at the complaint. But what I also said was that I cross-referenced those against the primary sources.

I read the conference call transcripts. I saw what the executives of this company were telling the public. And

Steven P, Feinstein, Ph.D

that's what I mean.

I mean, if you want, you know, I could have said why don't we just go back and read the conference call transcripts, but relevant excerpts are in the complaint.

So it's not the fact that there's an allegation of securities fraud that matters here. I'm just talking about how the company portrayed itself.

Q. And you think that any other economist who was faced with the task of having to conduct what you call a traditional event study would have excluded every date from the class period other than November 20, 2007; is that fair to say?

A. I -- well, I don't know what other economists are going to do. That's why I said I'm eager to see what your economists do.

But I think that if they arrive at a decision that differs from mine, that they would be wrong.

And I'll tell you why I believe that. I did go through every single day in

Steven P, Feinstein, Ph.D

the life of this company over the course of the class period. I read the news that came out on those days. I read the analyst reports that reported on the news that came out on those days.

And there's -- there were times when there was big announcements, but they would be confounded or conflicted.

If you look at the analyst reports that came out after each of the earnings announcements, except for the last one, they all say mixed results. They all say, there's some good news and there's some bad news, or the company posted a loss but the loss was expected.

So, the analysis I did -- I went through every single day. I went through the news on every single day, and I did not find, except for the last day of the class period, a good candidate for a single-event event study.

Q. Well, you reviewed Dr. Hallman's report, correct?

A. I did.

Steven P, Feinstein, Ph.D

Q. Who's Dr. Hallman?

A. He is a -- I could read his credentials out of his report if you would like, but he serves as an expert in this case.

Q. And Dr. Hallman chose to examine six dates for his event study, correct?

A. Right.

Q. And you believe, as you sit here today, that that was a mistake; is that fair to say?

A. Well, he chose a different approach. What his approach was, is to use all event -- all earnings announcements, and then after observing that four of the six were not significant, seek to explain why they ought to have not been significant.

That's a legitimate approach in some context. I just don't believe it's the best approach or the best approach to use in this case.

I think what would have been better is to select -- to read the news first before running the event study and

Steven P, Feinstein, Ph.D

determine whether it was an appropriate candidate to even test.

And for those first four, and arguably the fifth, of the earnings announcements, I saw, and I believe other economists would see as well, that the news was mixed or expected such that a statistically significant reaction was not to be expected.

Q. And is it fair to say that you exercised your judgment in determining whether or not the news was mixed?

A. It's not just judgment. If you look at the analyst reports, the word "mixed" is right in them.

Q. For every one of the dates you rejected?

A. No. For the analyst reports on the earnings announcement dates.

Q. But you excluded 329 dates from your event study, correct?

A. Right. Some of those had no relevant or no strongly material news. Most of them had no strongly material

Steven P, Feinstein, Ph.D

news.

Q. Some of them did have material news; is that fair to say?

A. But not of the kind that you would expect necessarily would have -- exantide would have statistically significant impact on the stock price.

I mean, it would have impact on the stock price, and you would detect it in a collective event study. But individually, because of high threshold for significance, the kind of news that came out typically on each day of the class period was not the kind of news that would reasonably cause one to expect a statistically significant stock price response.

So therefore, testing it is not informative, because if it's not supposed to -- if it wouldn't reasonably have a significant impact and then it doesn't, that nonsignificance doesn't tell you that the market's inefficient. It just confirms your prior assessment that the news wasn't that extreme.

Steven P, Feinstein, Ph.D

Q. From your perspective and your opinion, there was only one appropriate date to test in what you call the more traditional event study?

A. There was one most appropriate date, and the methodology that I chose, which I believe is the best methodology for this case, identified one such event.

Q. Were there other appropriate dates?

A. For a single-event event study? No.

Q. And in your view, reasonable minds cannot differ on that matter?

A. No, I think they can. I think reasonable -- that's why we have litigation, I guess.

So I'm eager to see what events your experts believe should have been included, but I believe that when they present those dates and we analyze them, we'll see that they were -- that the market -- based on what I now know about the market, having run my entire analysis, we'll see that Freddie Mac's stock reacted appropriately.

I'm eager to see those dates that

Steven P, Feinstein, Ph.D

they either reasonably or unreasonably may propose as being reasonable candidates for testing.

I didn't find any, and I believe there aren't any.

MR. FRANK: Just for purposes of the record, I just want it to be perfectly clear that my motions to strike are reserved.

MR. MARKOVITS: Yes.

BY MR. FRANK:

Q. Now, upon reviewing Dr. Hallman's report, you recognize that he found that only two dates yielded statistically significant results, correct?

A. That's right. Two of the six he tested.

Q. Two of the section he tested.

A. Yes.

Q. And one of those dates that yielded statistically significant results, according to Dr. Hallman, was November 20 of 2007, correct?

A. Right.

Steven P, Feinstein, Ph.D

Q. Now, Dr. Bajaj criticized Dr. Hallman's analysis, generally; is that right?

A. Yeah, that was his job, as he saw it.

Q. And he identified a number of flaws, in his opinion, with Dr. Hallman's analysis, correct?

A. That's my understanding.

Q. And he concluded that if you corrected Dr. Hallman's analysis, that only one date would have yielded statistically significant results, correct?

A. That -- that's my recollection, yes.

Q. He believed that that date was also November 20, 2007, correct?

A. Right.

Q. So you knew before you constructed your single-event event study that both Dr. Hallman and Dr. Bajaj had concluded that November 20, 2007 was a date that, upon testing, yielded statistically significant price movement, correct?

A. Well, I mean, the record is what it

Steven P, Feinstein, Ph.D

is. The history of the company is what it is.

We can't -- it's not like a laboratory, a scientific laboratory, where we can change the facts and see what the -- if the results change.

But yes, I did know, and because I did know, I was very careful to make sure that I could explain that the nature of the news that transpired that day was such so that under the objective selection criterion -- under the objective selective criteria, that date would be selected regardless of whether someone knew or did not know what the stock price reaction was that day.

Q. Well, what was the news that transpired that day?

A. The company posted a $2 billion loss. The company said that they would likely have to cut their dividend. The company said that they would -- they had to investigate strategic alternatives for capital infusion. The company disclosed

Steven P, Feinstein, Ph.D

that their exposure to nontraditional higher-risk loans was substantially greater than what the market previously knew.

Q. In what -- you just testified that the company disclosed that their exposure to nontraditional higher-risk loans was substantially greater than what the market previously knew.

Did I get that right?

A. Exactly right.

Q. And was that disclosed in the company's press release issued that day, or was it disclosed in its supplement to its information statement? Do you know?

A. I recall reading it in the conference call transcript.

Q. Your recollection is it was in a conference call transcript?

A. Well, actually, I recall in the conference call transcript one analyst commented on it, mentioned a 29 percent exposure. No, I don't recall which document the company released that day has the information. I do recall it was on

Steven P, Feinstein, Ph.D

Page 4 of one of those two documents, but I don't recall which document it was.

Q. When you say "one of those two documents," what are the two documents you're referring to?

A. The ones -- the one you just mentioned. The press release and then there's the supplement. I don't recall which document. But it was disclosed that day.

Q. Now, Dr. Bajaj also tested a total of 28 days prior to and during the class period, right?

A. My -- the scope of my engagement was not to respond to Dr. Bajaj's report.

I read his report. I considered it to the extent that it informed what I thought would be proper methodology for my analysis.

But I didn't seek to rebut him. So I -- I don't recall --

Q. Well, I didn't ask you anything about the purpose of your reviewing Dr. Bajaj's report.

Steven P, Feinstein, Ph.D

I just asked you whether he tested 28 dates, and the answer to that has got to be either yes, no, I don't know.

So, if you don't remember, it's really okay. It's just going to lengthen the day if we don't answer the questions.

A. It's the latter.

Q. So it's the latter being you don't recall?

A. Right.

Q. Okay, that's fine.

Now, plaintiffs chose the class period in this case, correct?

A. Yes.

Q. And what is your understanding of the last day in the class period? What day is that?

A. November 20, 2017.

Q. 2007, I think you mean?

A. 2007, right. 2007.

Q. We're not there yet.

So -- now, let me turn your attention back to your report.

In Paragraph 40 -- in Paragraph 40,

Steven P, Feinstein, Ph.D

you write, "An efficient market, as defined by Cammer, Basic, Amgen, Halliburton II, Bromberg and Lowenfels, and Fama, is a market in which available information is rapidly incorporated into the price of a security such that the trading price reflects all available information."

Do you see that?

A. I do.

Q. Where available information is only sometimes rapidly incorporated into the price of a security, is that an efficient market?

A. Well, the other times the market is either disregarding material information or there's an impediment to trading or an impediment to the information flow, then that would be inefficiency.

Q. And if available information is only rarely rapidly incorporated into the price of a security, that's not an efficient market either, correct?

A. Well, if you have some reason to believe that it's -- yes, yes, I would say

Steven P, Feinstein, Ph.D

yes.

If it's only rarely incorporated, that would not be efficient.

Q. For a market to be efficient, it needs to be rapidly incorporating available information all the time, right?

A. Right.

Q. Now, what are Form S-3 eligibility requirements?

A. Well, those are for publicly traded companies. It's an expedited way to register secondary issues of stock that are available to companies that satisfy certain criteria.

Q. And being eligible to file a Form S-3 is one of the factors that was set forth in the Cammer test, right?

A. That's right.

Q. And --

A. Well, you call it a Cammer test. I wouldn't call it a Cammer test. It's not a set of necessary conditions that a stock or company have to -- has to satisfy in order to be deemed efficient.

It's -- they're factors that are considered in the aggregate to determine whether it's more likely than not that the stock trades in an efficient market.
Q. Fair enough. I did not mean to misspeak. That's fair.
Being eligible to file a Form S-3 is one of the factors that was set forth in the Cammer decision?
A. Yes.
Q. And at the time that the Cammer decision issued, one of the criteria for being eligible to file a Form S-3 was that over the preceding 36 months, the company was regularly filing its Form 10-Ks and 10-Qs with the SEC; is that correct?
A. That's right.
Q. Now, at the time -- and that has changed, I take it?
A. Yes.
Q. It's now a twelve-month look-back period; is that right?
A. That's right.
Q. Now, during the class period in this

case, Freddie Mac wasn't an SEC registrant, correct?
A. That's right.
Q. And so just as a matter of fact, it wasn't eligible to file Form S-3s, putting aside the Form S-3 eligibility criteria, correct?
A. Right. It was an exceptional company and as a result of that unique nature, it wasn't eligible.
Q. Now, instead of filing Forms 10-K and Forms 10-Q, Freddie Mac posted on its website other forms, right? Is that correct?
A. That's right. Right.
Q. Do you remember what those are called?
A. Yes. They filed an annual report and information supplements.
Q. And do you recall that its annual report was sometimes called -- was called an information statement?
A. Yes.
Q. And when it supplemented its annual

reports, it called those supplements to information statements?
A. Yes.
Q. Now, when do companies typically file annual reports with the SEC?
A. There's a schedule. They have a certain number of days following the closing of the quarter.
Q. And when it comes to annual reports, they typically file within, is it fair to say, two months or so of the close of the fiscal year?
A. Right.
Q. And quarterly reports, somewhere around 45 days within the close of the quarter; is that right?
A. Or so, yes.
Q. Now, in connection with your work on this case, did you take a look at Freddie Mac's information statements and information statement supplements for the 36-month period preceding the class period?
A. I did.

Q. And do you know how long after the close of Freddie Mac's fiscal year in 2003 --
A. 2003?
Q. Yes. So let's back up. So 36 months before August 1 of 2006 takes us to August 1 of 2003, correct?
A. Right.
Q. So, in the year 2000, Freddie Mac would have been posting its 2002 information statement, right?
A. I'll take your word for it. Sure.
Q. Well, we can all agree that 2002 doesn't end until December 31 of 2002, right?
A. Right.
Q. So it was filing its annual statement sometime in the year 2003, right?
A. Yes. Right.
Q. Do you know how promptly Freddie Mac filed that information statement?
A. No.
Q. How about for 2003 or '04 of '05?

Page 102

Steven P, Feinstein, Ph.D

Do you know how promptly it filed its information statement?

A. No, I did observe -- I mean, I don't know specifically, but I did observe that it took longer than publicly traded companies that are required by the SEC to file these reports. It typically and routinely took much longer.

Q. Did you notice that when it comes to supplements to information statements that Freddie Mac wasn't posting them quarterly?

A. Correct.

Q. It was posting them less frequently?

A. I'd have to check that. But my recollection is that it was longer and less regular than for typical SEC registrants.

Q. Why is Form S-3 eligibility relevant to the consideration of whether a security trades in an in an efficient market?

A. I have that written on Page 22, at least what the court considered, Page 22, Paragraph 79 of my report.

I wrote: "Cammer court noted that

Page 103

Steven P, Feinstein, Ph.D

S-3 registration eligibility is indicative of market efficiency, because the filing requirement ensures that financial data are available to market participants, and the public flow requirement indicates that many market participants would have examined the information."

Then the quotes from the Cammer court's decision, if you look at the last one, to speeds things up, "It is the number of shares traded and value of shares outstanding that involve the facts which imply efficiency."

So that's why. It's a size requirement, that means that it's a big enough company that people would be paying attention to it. People were certainly paying attention to Freddie Mac.

Q. It's also a requirement, isn't it, that the company is regularly sharing its information in compliance with SEC quarterly and annual filing requirements, correct?

A. Right. And what's on Page 22 --

Page 104

Steven P, Feinstein, Ph.D

I'll read the rest of it, since you asked.

Q. I'm sorry. I don't think I asked you to read from your report.

A. No, you -- you -- your question was, is it not the case that the filing requirement is also important?

So because you asked that, I'll read the part that I skipped.

"Proposed Form S-3 recognizes the applicability of the efficient market theory to the registration statement framework with respect to those registrants which usually provide high-quality corporate reports, including exchange document reports and whose corporate information is broadly disseminated, because such companies are widely followed by professional analysts and investors in the marketplace."

Well, regardless of whether Freddie Mac took 45 days or two and a half months, no one can dispute that Freddie Mac was widely followed by professional analysts and investors in the marketplace.

Page 105

Steven P, Feinstein, Ph.D

So that's why I did not consider the longer period of time to be relevant to the determination of market efficiency or the lack thereof.

Q. So --

A. It also says, "Because of the foregoing observations made by the SEC, the existence of Form S-3 status is an important factor, weighing in favor of a finding that a market is efficient."

And then the next two pieces from the Cammer decision focused on the size of the company, the public flow and the size of the company as being the relevant portion of the requirements, not the speed at which it produces its reports.

Q. Well, let's put aside speed. Let's talk about regularity.

Do you think that the fact that Freddie Mac wasn't providing regular quarterly reports during the period preceding the class period is relevant to whether or not analysts or investors had as much available information about the

Steven P, Feinstein, Ph.D

company as compared to companies that were complying with their SEC filing obligations?

A. That's exactly -- no, they did not have as much information during some periods of time as other companies. And efficiency means that the stock price reacts and incorporates the information that's available. It doesn't say that -- only if we're talking about the strong form efficient market hypothesis, and that's not what we're talking about here. But for the semi-strong form efficient market hypothesis, the question is, is the market incorporating the information that is made available.

The fact that some information may not be made available doesn't mean it's going to be inefficient with respect to information that is made available.

Q. Now, what is the null hypothesis?

A. Of which test?

Q. Well, what does the expression "null hypothesis" mean?

Steven P, Feinstein, Ph.D

A. Oh. Well, in statistics, most -- the way you prove things in statistics is by assuming the opposite of a proposition and then showing that reality doesn't conform to the implications of that opposite proposition.

So the opposite proposition is the null hypothesis.

You state something like, the market is not efficient, the market ignores information, and then you do a test to see if the reality is consistent with the market ignoring information.

And if the reality is not consistent with the market ignoring information, you could reject that null hypothesis that the market is inefficient.

Q. Now, then, applying the null hypothesis to your two tests, what is the null -- strike that -- what was the null hypothesis for your single-event event study test?

A. That the stock price movement that day was simply a random fluctuation and the

Steven P, Feinstein, Ph.D

movement in the stock price was not caused by information; that the market did not react to the information that came out that day.

Q. With respect to your FDT z-test, was there one null hypothesis or more than one null hypothesis?

A. It's one. The null hypothesis is that the market disregards available information, such that stock price is not impacted by available information.

Q. Now, in each of those instances, your event study or single-event event study on the one hand and the FDT z-test on the other, can the null hypothesis be reduced to an econometric equation?

I'm going to give you a hint.

Are there equations that have the letter P in them that economists use to express the null hypothesis in their tests?

A. No, that's not quite right. I mean, I think what you're getting at, and if you would like me to explain, I will.

P is the probability of observing

Steven P, Feinstein, Ph.D

the result that you observe under the assumption that the null hypothesis is true.

So a P value is derived from a regression, based on the assumption of a particular null hypothesis.

Q. So, a null hypothesis cannot be expressed in an equation using P and other variables?

A. It probably can. And it would be meaningful only to other econometricians, but I guess if you want me to do that, what it would be is that the probability -- no, I'm going to say you can't do that.

I mean, that's -- I think if you reduce it too far, then you're too far from -- it's not as meaningful as if you express it the way I expressed it.

Q. Not as -- well, it might not be meaningful to me, but assume that we've engaged an expert economist.

Is there a meaningful way to express the null hypothesis that economists would understand?

Steven P, Feinstein, Ph.D
A. No. The stated null hypothesis in each of my empirical tests is that the market ignores information and is, therefore, inefficient. And by demonstrating repeatedly that it's not the case, we have examples and demonstrations of the stock being efficient and behaving efficiently.
MR. FRANK: Why don't we take a break here. I'm going to label a number of exhibits, so it probably makes sense to be more efficient about it. Off the record, please.
THE VIDEOGRAPHER: We are off the record at 10:36.

(Recess taken from 10:36 a.m. to 11:05 a.m.)

THE VIDEOGRAPHER: We're back on the record at 11:05.

BY MR. FRANK:
Q. Dr. Feinstein, we were talking

Steven P, Feinstein, Ph.D
earlier about how you went about selecting dates for your single-event event study.
Do you recall that?
A. Yes.
Q. And you were testifying about the subject of reviewing dates that might have mixed news, confounding information, where news was expected and where, as a result, that news wasn't expected to cause stock price movement.
Do you recall that discussion?
A. Wasn't expected to cause a stock price movement above the threshold for significance.
Q. If news isn't expected to cause stock price movements above the level of significance, is that evidence of market inefficiency?
A. No.
Q. Well, if a stock price moves on no news, is that evidence of market inefficiency?
A. Generally not, because there's --
Q. If --

Steven P, Feinstein, Ph.D
A. -- background volatility. It's well-established in the literature that there's a current of background volatility affecting all stocks.
Q. And your regression analysis is designed to adjust for that background volatility; is that correct?
A. Not to adjust for it, but to establish a comparison benchmark so that we can discern whether a movement is so big that it's not reasonably caused by that background volatility.
Q. So if there's no news and you've run your regression analysis to discern whether a movement -- what level of movement would be needed to conclude that the movement is not reasonably caused by that background volatility -- well, strike that.
Too complicated.
Are there any tests that can be run to establish market inefficiency?
A. Yes.
Q. And could you use a single-event event study to do that?

Steven P, Feinstein, Ph.D
A. Well, if you have a date that you -- or an event that you believe really should have moved the stock price, and then you observe that the stock price did not move and there's, perhaps, other evidence that it was completely disregarded and ignored by the market irrationally, that's an indicator -- that's evidence of inefficiency.
I mean, we're speaking in the hypothetical here, in the general. But that would weigh against a finding of market efficiency.
I don't know if -- depending on how clear and certain the conclusion was that the market simply ignored -- irrationally ignored the information, you may or may not need additional evidence.
Q. If the stock price moved in a statistically significant way in the opposite of the expected direction, would that be evidence of market inefficiency?
A. Well, it depends. I mean, if the nature of the news is such that it is

Steven P, Feinstein, Ph.D
absolutely clear and indisputable which direction the stock price should move, if investors are rational, and the price moved in the opposite direction, that would weigh against fundamental efficiency.

I mean, whatever model you're using to determine the correct direction of the price movement, it would -- that would be evidence that the market was not using that same model, that the market was, perhaps, was -- perhaps they're reacting to the news, so there's no impediment to information flow or trading, but perhaps there's some irrationality there, which would weigh against fundamental efficiency.

Q. Now, in connection with your effort to select one or more dates for your single-event event study, you described earlier the review of information you did to select an event, correct?

A. Yes.

Q. Is there any literature that supports the approach that you took in this case to select an event for your

Steven P, Feinstein, Ph.D
single-event event study?

A. Yeah. I cite to it.

There's an established literature on how to run an event study.

Q. And what literature are you referring to?

A. Well, specifically, I think the seminal work or, actually, the seminal review is the review article by, Lo and MacKinlay. There's also the -- I cite to it here.

(Witness reviews document.)

The Nicholas Crew chapter, "Federal Securities Acts in Area of Expert Analysis in Litigation Services Handbook," Chapter 24, also presents the standard events study methodology, and event selection methodology is a component of that.

Q. I'm sorry. What page of your report are you on?

A. 52, "Academic and Professional Literature" in "Documents and Other Information Considered."

Steven P, Feinstein, Ph.D

Q. And --

A. The fourth bullet point from the bottom.

Q. And it's your understanding that the Nicholas Crew article entitled "Federal Securities Acts and Areas of Expert Analysis," describes the method that you used in this case to select November 20, 2007 for your single-event event study?

A. Well, they discuss the event study methodology and how to do it.

I believe what I did is supported by the literature. I don't know if they -- if they explain -- I don't know how much -- I don't recall exactly how much detail they go into in event selection. But certainly, what I did is consistent with -- well, not only consistent, it's directed by the principles that they explain, them and Campbell and Lo and MacKinlay, about how to run an event study.

Q. Other than Crew and Campbell, Lo and MacKinlay, are there any other academic or professional articles that, in your view,

Steven P, Feinstein, Ph.D
support the approach that you took in developing and selecting -- in selecting the November 20 date for your single-event event study?

A. And to be clear, what we mean by that methodology is that I read the news and assessed whether the news was such that it would reasonably cause a statistically significant movement before subjecting that event to an event study. That's what we're talking about. Right?

Q. Other than Crew and Campbell, Lo and MacKinlay, are there any other academic or professional articles that, in your view, support the approach that you took in selecting the November 20 date for your single-event event study?

A. Well, other than these seminal works, there may be. I would have to check. I don't have the -- I know the principles from the literature, but I don't have memorized the bibliography of where these principles reside.

Q. None come to mind as you sit here

Steven P, Feinstein, Ph.D

today, other than what you've already identified?

A. Well, because I've identified these two, and I always felt that was sufficient. But if you want additional ones, I would have to go review the literature.

Q. No other ones come to mind as you sit here right now?

A. Right.

Q. Now --

A. I mean, that's not to say they're not there. They just don't come to mind. Let me be clear about that.

Q. Now, you used a different approach to selecting dates for your FDT test, correct?

A. It's a different test. It calls for a different selection algorithm.

Q. And is there any literature that supports the view that the selection of dates for an FDT z-test should be different than the selection of dates for an event study?

A. Yeah. Yes. I believe the original

Steven P, Feinstein, Ph.D

FDT test describes separation of dates into news and non-news categories, rather than identification of appropriate dates for a single-event event study.

Q. When you refer to the original FDT test, are you referring to the FDT article?

A. That's what I meant, the article.

Q. Now, in the past, you have used earnings dates as the dates that were tested for purposes of an FDT z-test; is that correct?

A. That's right.

Q. You didn't do that in this case, right?

A. That's right.

Q. Why not?

A. Well, they've already been picked over, essentially, by Hallman and Bajaj. They -- I mean, the FDT test separates the buckets, separates the dates into two categories based on information flow or low information flow without examining whether each particular day should be significant or not significant based on the nature of

Steven P, Feinstein, Ph.D

the news.

So since they've already done that analysis and I was aware of that analysis, it was inappropriate to use the -- to retry the same territory and use the same dates, the same event categories.

So I looked for a different rule that would -- that would identify a broader and different selection of news event dates.

Q. Did Dr. Hallman conduct an FDT z-test in this case?

A. No, but he did, in response to Dr. Bajaj, the detailed news analysis to explain why the events should or should not be significant.

Once you've done that, you can't use the same selection, or I don't think you should use the same selection rule. You should look for a different selection rule that captures event -- news flow dates, high news flow dates as opposed to low news flow dates.

Q. Why shouldn't an economist like

Steven P, Feinstein, Ph.D

yourself use the same rule?

A. Because it was already established that at least four of the six earnings announcement dates were such that they would not be statistically significant. They already established that.

So a different rule would provide new information.

Q. You already knew before you even constructed your FDT z-test that at least four of the six earnings dates over the class period in this case yielded statistically insignificant results; isn't that right?

A. Right. So I could have entered that fray, but I thought it would be more informative not to, to choose a different rule and a different test.

MR. FRANK: Let's mark the CVS Caremark report.

Let's go off the record for one moment.

THE VIDEOGRAPHER: We are going off the record at 11:19.

Steven P, Feinstein, Ph.D

(Brief recess.)

(Exhibit No. 97 marked for identification.)

THE VIDEOGRAPHER: We are back on the record at 11:19.

BY MR. FRANK:
Q. Dr. Feinstein, I'm showing you a document that has been marked as Exhibit 97.
What is Exhibit 97.
A. This is a report on market efficiency that I wrote and submitted in February of 2015 in conjunction with the CVS Caremark case.
Q. And did you perform an event study in this case?
A. (Witness reviews document.)
Yes.
Q. What page are you looking at?
A. I'm looking at the table of

Steven P, Feinstein, Ph.D

contents, where it -- which refers to Page 19, event study test of market efficiency throughout the class period.
Q. And if you turn to Page 19, you'll see that the -- at the top of the page, it's Paragraph 86.
Do you see that?
A. Yes.
Q. And do you see in the first sentence, it says, "The second empirical test was an event study that investigates whether CVS Caremark common stock exhibited market efficiency by generally moving more in response to the earnings and guidance events than it moved typically on all other dates."
Do you see that?
A. Yes.
Q. And does this document refresh your recollection that you actually used earnings and guidance events as the dates you studied in your event study for the CVS Caremark matter?
A. Yes. I mean, for the collective

Steven P, Feinstein, Ph.D

test.
Q. Was there a single-event event study that you conducted in this case that was not a collective test?
A. Yes.
Q. And where is that set forth in the report?
A. (Witness reviews document.)
Page 22, there were two events, January 9, 2009 and November 5, 2009.
And the results, I mean, beginning on Page -- Paragraph 96 is the description of that test, and that runs through Paragraph 123.
Q. And you identified those two dates that you studied in Paragraph 99, correct?
A. Yes.
Q. And those were both earnings disclosure dates, correct?
A. Not really. I think what it says here is January 9 was a guidance date -- a guidance change date, not an earnings announcement date.
Q. It changes its guidance for expected

Steven P, Feinstein, Ph.D

earnings, correct?
A. Right, while November 5 was an earnings announcement date.
Q. You didn't perform a z-test in the CVS Caremark case, did you?
A. No, I used the F-test and the Ansari-Bradley test.
Q. And let me turn your attention to the next exhibit that has been marked as Exhibit 98.

(Exhibit No. 98 marked for identification.)

BY MR. FRANK:
Q. Is it fair to say that Exhibit 98 is your expert report in the JPMorgan securities litigation?
A. Yes.
Q. Dated February 13, 2015, correct?
A. Yes.
Q. And then in that case, you also did an event study, correct?
A. Yes.

Steven P, Feinstein, Ph.D

Q. You did both a single-event event study and a collective test, correct?

A. Correct.

Q. And while you did a collective test, it wasn't a z-test, correct?

A. That's right. An F-test and then Ansari-Bradley.

Q. And you used -- and please turn your attention to Page 19, Paragraph 83.

A. Yes.

Q. And there you see in the second paragraph, it says, "The events tested during this examination period were all earnings and guidance announcements."

Do you see that?

A. I do.

Q. And in Paragraph 84, it also says you examined the earnings and guidance announcements; is that right?

A. Yes.

Q. And you examined more than one date for your single-event event study in that case, correct?

A. It seems to be three events, yes.

Steven P, Feinstein, Ph.D

(Exhibit No. 99 marked for identification.)

BY MR. FRANK:

Q. Now, let me turn your attention to the next exhibit.

This is a -- this is a document that's been marked as Exhibit 99.

Exhibit 99 is your report in the Petrobras securities litigation dated October 15, 2015; is that correct?

A. Yes.

Q. You did an FDT z-test in this case, correct?

A. Yes.

Q. Do you know how many total FDT z-tests you have done as an expert in securities litigation?

A. No.

Q. But this is one of the cases?

A. Yes.

Q. Now, in this case, you used earning dates as the dates that were the subject of

Steven P, Feinstein, Ph.D

your FDT z-test, correct?

A. No. Yeah, I ran the test on earnings dates. I also ran it on 6-K event dates as well, which are like 8-Ks, but for a foreign company.

(Exhibit No. 101 marked for identification.)

BY MR. FRANK:

Q. Let me turn your attention to a KBR report. I'm showing you a document that has been marked as Exhibit 101. We're going to go a little bit out of order, because we premarked it.

Exhibit 101 is your report dated February 19, 2016 in the KBR securities litigation; is that correct?

A. Yes.

Q. In the KBR case, you did both a single-event event study and a collective test, correct?

A. Yes.

Q. And how many dates -- when you say

Steven P, Feinstein, Ph.D

"single-event event study," you use that expression to include when you do that for a series of cases, right, a series of dates, right?

A. Yes.

Q. When you say "single-event event study," you don't mean that there was necessarily a single event for the entire event study, correct?

A. Correct. But each time the event study is run, it's focused on a single event.

Q. Right. And how many dates did you look at in the KBR matter?

A. (Witness reviews document.)

Four.

Q. And for the collective test, you used -- strike that.

For both the event study and the collective test, you used earnings dates, correct?

A. Let me check.

(Witness reviews document.)

Well, it's -- what it says on

Steven P, Feinstein, Ph.D
Paragraph 104 and -5 is that I used corrective disclosure dates, which -- well, some of which -- the first, third and fourth -- were financial reporting dates; and the second one, May 5th, 2014, was not. It was a date where they announced that they would be restating their financials.
Q. Let me turn your attention to Paragraph 93.
There you say -- that you ran -- the second set of tests you ran collectively is a broad set of events that occur over the course of a full year that ends with the class period?
A. That's right.
Q. You wrote "The events tested during this estimation period were all earnings and guidance announcements."
Is that correct?
A. Yes.
Q. And what you wrote there was true? For your collective test you were looking at earnings and guidance announcements, right?

Steven P, Feinstein, Ph.D
A. That's right.
Q. And --
A. That was the sorting variable.
Q. And for your event study that wasn't a collective event, you also looked at dates -- you looked at four dates; is that correct?
A. Right. I picked dates that were the red-letter dates in the life of this company, which were the corrective disclosure dates, one of which was not an earnings announcement date.
Q. But three of which were?
A. Right.

(Exhibit No. 102 marked for identification.)

BY MR. FRANK:
Q. Let me turn your attention to a document that's been marked as Exhibit 102.
This is your expert report in the World Acceptance Corporation securities

Steven P, Feinstein, Ph.D
litigation, dated September 28, 2016.
MR. MARKOVITS: Do I have that in the binder here?
MS. HAYS: You should.
MR. MARKOVITS: Five is missing.
MR. FRANK: We're going to make a donation to the cause.
MR. MARKOVITS: Thank you. I'm sorry. What exhibit number was this?
MR. FRANK: 102.
BY MR. FRANK:
Q. Exhibit 102, you have that before you, correct, sir?
A. Yes.
Q. And did you -- you didn't do an FDT test in this World Acceptance Corporation matter, right?
A. You're saying I did not?
Q. You did not.
A. I did the collective test using the F-test and Ansari-Bradley test.
Q. You didn't do the z-test?
A. Correct.

Steven P, Feinstein, Ph.D
Q. Now, what dates did you choose for your collective test?
A. Earnings announcement events.

(Exhibit No. 103 marked for identification.)

BY MR. FRANK:
Q. Now, let me turn your attention to the next exhibit.
This is Exhibit 103. Exhibit 103 is, I think, if we've done this right, is your report in the Eletrobras securities case, dated June 30, 2017.
Do you see that?
A. Yes.
Q. And you did a z-test, an FDT z-test in this case, correct?
A. Yes.
Q. And do you, essentially, use the term z-test and FDT z-test to mean the same thing when you're talking about this test in the securities litigation context?
A. Yes.

Q. And you used earnings dates as the basis of your test -- your z-test in the Eletrobras case, correct?
A. Yes.
Q. Let me turn your attention to your report in this case. You should still have that before you. I believe that's been marked as Exhibit 96.
A. I have it.
Q. And do you see that there's an Exhibit 7 at the end of your report?
A. Yes.
Q. And do you see that on Exhibit 7, there's, I guess, four panels; is that fair to say?
A. Yes. Well, yes.
Q. What word do you use to describe the different tables?
A. There's two panels. These are regression results, but for the two subperiods.
Q. Two panels. So let's talk about the first panel.
A. Okay.

Q. Do you see in the first panel the second table that lists coefficient standard errors and T-statistics?
Do you see that?
A. Yes.
Q. We see an intercept in the far left column, correct?
A. Yes.
Q. And a market index, right?
A. Yes.
Q. And a peer index, right?
A. Yes.
Q. And then we see five dates. Do you see that?
A. I do.
Q. What -- why are those five dates on this table?
A. (Witness reviews document.)
Well, these are the dates that are tested. These are the specific dates that are tested in the two different empirical tests.
So if -- and if, under the null hypothesis that there's no difference

between information and no information dates or high information and low information dates, it's benign to control for abnormal -- the abnormal nature of event dates and only under the alternative assumption that the market is efficient and that the information -- that the market response to information, then, these dates should be controlled for, since what we're trying to do is measure typical background volatility and not volatility that's impacted by the atypical responses to atypical news.
Q. I think at the beginning of your answer, you said these are the dates that were tested in the two different tests. I'm not sure that that's accurate.
What are the two tests you're referring to?
A. The single-event event study, that November 20, 2007 is controlled for. And if you look at Page 79, these are the -- this is the collective date -- the collective event test. The right-hand

column on Page 79 tells us which is the effective date of the event, and they correspond exactly to what you see in Exhibit 7: February 27, April 18, May 22, June 14, August 8, August 30, September 27, November 8 and November 20.
Q. Did you control for these five dates in your regressions for both the single-event event study and the FDT z-test?
A. Yes.
Q. And that's what this -- these two tables are showing?
A. Yes. I mean, the reason for running a regression in an event study is to measure typical volatility, the typical level of background volatility.
If there's some reason to suspect that some dates might have atypical volatility, they should be controlled for.
Q. Is it a mistake to fail to control for them?
A. Again, I wouldn't paint it black or

Page 138

Steven P, Feinstein, Ph.D

white like that.

You have to consider that in the interpretation of the results if they weren't controlled for.

If anything, not controlling for them would bias the test toward a finding of nonsignificance for an event date. So you have to consider that when evaluating the power of the test and the results.

Q. When you say it might bias the test in favor of finding nonsignificance, is that another way of saying that if you include these dates in your regression, it's more likely that you would find nonsignificance; and if you exclude them, it's more likely that you would find significance?

A. If you exclude them, and the fact of the matter, the real world is such that the market's efficient and does react to information -- let me say that again.

The fact of the matter is that the world is efficient and that this stock trades in an efficient market, such that

Page 139

Steven P, Feinstein, Ph.D

the price reacts to information, if you do not control for event dates that are unusual dates, your regression will be more likely to find an event nonsignificant.

Q. Well, when you make the decision as to whether to include them or exclude them, you have to be agnostic as to whether or not the market is efficient, correct?

A. That's right. And that's why this is a good assumption, because being agnostic and not knowing what the results are and relying on the test to vindicate what the results are, it's completely benign under the null hypothesis to exclude event dates or to dummy for event dates, to control for event dates.

But it wouldn't be benign to not control for them if, in fact, the market is efficient.

So the right course of action is to control for them. Certainly, before you know the results, before you've run the regression.

Q. Isn't it possible that if the market

Page 140

Steven P, Feinstein, Ph.D

is inefficient, that controlling for them can affect the results of the testing?

A. Well, I mean, if you mean -- when you run the test two different ways, you'll always find slight differences. But you want to see if there's a systematic difference caused by a factor relevant to the null hypothesis or the alternative hypothesis.

But what you want to see is, if it's benign, taking into account what you're trying to test. And in this case, it would be benign to control for them if the market is inefficient. And it would be appropriate to control for them if the market is either inefficient or efficient.

So the right course of action would be to control for them.

Q. Did you run your test without controlling for them?

A. Could I or did I?

Q. Did you.

A. No.

Q. Well, so do you actually know

Page 141

Steven P, Feinstein, Ph.D

whether or not -- strike that.

Do you know how it would affect your results if you hadn't controlled for these five dates?

A. In theory, but not the quantification.

Q. What's your understanding in theory?

A. In theory, if the market is efficient such that information dates have unusual price dynamics, then not controlling for them -- in other words, letting these days appear in the data series as typical days -- would upwardly bias the measured level of volatility, and therefore, downwardly bias the likelihood of finding a statistically significant event result.

Q. Isn't it possible that if the market's not efficient, then controlling for them biases the results in favor of the a finding of market efficiency?

A. I wouldn't call that bias. I mean, it's certainly possible that the -- because

Steven P, Feinstein, Ph.D

of random effects that -- well, because of random effects, changing the specification of the regression will change the regression results to some extent.

That's why it's important to do it right. That's why it's important to drive the decision of whether to include them or not include them on the basis of statistical -- generally accepted, widely used and correct statistical methodology, which is what I did.

But if you do it wrong, yeah, you'll see a different result. I mean, theoretically the result would be to find less significance if you do not control for these dates.

But that would be spurious and wrong.

Q. Now, it would be spurious and wrong not to control for the dates? That's your view?

A. Yes.

Q. Okay. Now, I see that there are --

A. I mean, the result would be spurious

Steven P, Feinstein, Ph.D

and wrong. The methodology would be wrong, and the result of finding nonsignificance when, in fact, the date -- the event is actually significant, that would be a spurious result.

The methodology isn't spurious, the result would be spurious based on the wrong approach.

Q. If you assume that the market's efficient?

A. No, not based on the assumption.

Whether the market's efficient or not -- okay.

Let's make a decision. Do you control for the event dates or do you not control for the event dates?

Under the null hypothesis that the market is inefficient, it doesn't make any difference.

So -- so we don't have to -- we don't have a directive from that consideration.

But under the alternative hypothesis that the market is efficient, not

Steven P, Feinstein, Ph.D

controlling for them would lead to a spurious result, and controlling for them would lead to the correct result.

So given that out of the four possibilities -- controlling, not controlling, efficient, not efficient -- considering those four possibilities, the right thing to do is to control for them.

Q. But let me --

A. It's benign -- if you're -- it's benign if the market is inefficient. And it matters and it's correct if the market is efficient.

(Exhibit No. 100 marked for identification.)

BY MR. FRANK:

Q. Well, let me show you a document that has been marked as Exhibit 100. We've stapled it in the top right for your ease of review.

I will represent to you that this is Exhibit 7A from the Petrobras report that

Steven P, Feinstein, Ph.D

you reviewed earlier.

Now, you'll see on Exhibit 7A that this is a Petrobras common ADR regression summary.

Do you see that?

A. Yes.

Q. Now, I see that there's a column for intercept there. Do you see that?

A. Yes.

Q. And just like on Exhibit 7 of your report in this case, there's a row for intercept, right?

A. Yes.

Q. And there's a column for market index, right?

A. Yes.

Q. Coefficient? And we see market index on your report here, right?

A. Yes.

Q. And we see a peer index coefficient, just like we see a peer index row here in your report in this case, right?

A. Yes.

Q. But there are no dates listed there,

Steven P, Feinstein, Ph.D

right?

A. Correct.

Q. And just like this case, in the Petrobras case, you used earnings dates as the basis for your FDT z-test, correct?

A. In -- I used earnings, and I ran the test also using the 6-Ks. There are something like eight-five 6-Ks.

Q. You used earnings dates and 6-K dates?

A. Right.

Q. Is that correct?

A. That's right.

Q. In your regression summary in Petrobras, you did not control for the earnings dates or the 6-K dates, correct?

A. That's right, for good reason.

Q. And what's --

A. Or two good reasons.

Q. What are the two good reasons?

A. One, that would have required about 85 or 90 dummy variables. Reports have already looked and said economists dummying out 85 or 90 days.

Steven P, Feinstein, Ph.D

So I didn't want to make that mistake or even raise the appearance that I was dummying out too many dates, such that the regression could be considered or considered unreliable.

So you can imagine how wide this document would have been if I had 85 or 90 dummy variables.

And I think I may have explained, either in the report or in testimony, for that case, the same thing that I told you today, which is that if anything, not dummying out and controlling for tested event dates, if anything, that would bias the result towards a finding of inefficiency and nonsignificance.

So, basically, I -- this was a conservative decision to run the regression in a manner that was most favorable to defendants and see what results are produced.

Q. Does dummying out the dates bias the test in favor of efficiency or inefficiency?

Steven P, Feinstein, Ph.D

A. Neither. If -- neither. Because in -- if the market is, in fact, inefficient, there should be no effect.

And if the market is determined to be efficient, then dummying out is the correct unbiased approach.

Q. How can you be certain that if the market is inefficient, there should be no effect?

A. Because the purpose of the regression is to measure the typical volatility. And event dates will have typical volatility in an inefficient market.

In an inefficient market investors are ignoring the flow of information -- this is the working definition for inefficiency -- for whatever reason, the information is being ignored and not impacted into the price, event dates will be -- will behave like typical dates. And they should -- they, therefore, can be included in the regression without any impact on the regression results.

Steven P, Feinstein, Ph.D

Q. Now, you testified earlier that a Form 6-K is like a Form 8-K but rather than Form 8-Ks that are filed by domestic US companies, 6-Ks are filed by foreign companies, correct?

A. That's right.

Q. And what's a Form 8-K?

A. Well, it's a form that, according to SEC directives, SEC registered companies must file when there are material developments, material events, or events that they consider material. And they're not material from the point of view of an econometrician necessarily, but they're material from the point of view of the management of the company as to what's important and relevant for the market to know.

Q. And the Form 6-K is just the equivalent for the foreign corporation?

A. That's right.

Q. Now, in terms of -- I just want to make sure I understand.

In terms of whether you dummy out

Steven P, Feinstein, Ph.D

variables or not, dummying out variables makes it more likely that -- or strike that.

Including these dates and not dummying them out makes it more likely that there's a finding of market inefficiency, correct?

A. Under -- under -- well, now we're talking about type 1 and type 2 error.

In a world -- if, in fact -- unbeknownst to the researchers, but it's a fact, God knows, that it's an efficient market. If that's the case, then dummying out the events will give you the correct result -- will be more likely to give you the correct result that, in fact, the market is efficient.

On the other hand, let's say the truth of the matter is that the market is inefficient -- God knows it, but we don't yet know it, we have to do the econometrics to determine it. Dummying out the variables will have no effect. So it makes it more likely that you get the correct

Steven P, Feinstein, Ph.D

result when the market is efficient. It has no result on correct or incorrect when the market is -- I said that backwards. Wait.

If the market is efficient, you get the correct result; it's more likely you get the correct result.

If the market is inefficient, it won't affect the results one way or the other in terms of bias and changing the probabilities of a particular finding.

Q. And is dummying out the variables favorable to plaintiff or defendant in your view?

A. I think it's favorable to the court, because we get at the right answer. I mean, it's -- that's how I view it.

Q. So it's not your view that it's favorable to one party or another?

A. It's the correct methodology -- it's the correct methodology to get at the right answer.

Q. And you didn't do it in Petrobras, not because it wasn't the correct

Steven P, Feinstein, Ph.D

methodology, but just because there were so many dates that you thought you would be criticized for dummying out so very many dates?

A. Right. There are cases where experts have been excluded for having too many variables dummied out in their regressions.

And being cognizant of the fact of that, but also the fact that, if anything, it would bias the results towards a finding of inefficiency, I chose that as the correct approach for that case, given that set of facts.

Q. Now, would it have been possible in that case for you to just dummy out the earnings dates and not the 6-K dates?

A. Anything's possible. That just simply would have opened the door towards criticism of why did I stop at the earnings dates?

I mean, there's a wide range of reasonable approaches, each with advantages and disadvantages. What I did, I think,

Steven P, Feinstein, Ph.D

was the best balance.

Q. When constructing a test like this, you have to make choices; is that right?

A. Yes. Yes.

Q. And your choice in that case was not to dummy out the dates that were being otherwise tested, correct?

A. Correct.

Q. And in that case, you felt justified in doing that, in part, because not dummying out those dates would bias the test in favor of the defendants; is that right?

A. No, I -- could I hear your question again.

Q. Sure.

In that case, you felt justified in not dummying out the dates, in part, because that would bias the test in favor of the defendants, correct?

A. Yes. The course that I did choose, if anything, would have -- would bias the result in favor of the defendants. So I chose the more conservative approach, at

Steven P, Feinstein, Ph.D

least conservative from the perspective of the plaintiff -- for the plaintiff's side.

Q. In the Petrobras case?

A. In the Petrobras case.

Q. Now, in the FDT z-test that you conducted here, when you selected dates, you -- how did you go about your selection process?

A. I read the news. I read the analyst reports. I read the documents that we talked about. And -- well, along the way, I made a decision that I would not retread over the same ground that Hallman and Bajaj had covered.

And it became -- I observed that strictly from -- strictly from the fundamental economic valuation perspective, there just didn't seem to be a -- from reading the news and the analyst reports, I realized that this is a unique company, that it -- that what investors cared and were concerned about frequently, what they asked questions about at conference calls was more than just the fundamental

Steven P, Feinstein, Ph.D

valuation principles that are usually covered in conference calls, but that investors and analysts understood that this is a political creature, Freddie Mac, and the political environment had a lot to do with the fortunes of this company and the future fortunes of this company and the valuation of this company.

So the kind of news that it appeared from reading the analyst reports and the news articles, the kind of news that people seemed to be concerned about from that part of the Cammer and Krogman analysis was looking at news articles and analyst coverage, informed me that for the empirical test I should choose a rule that would somehow capture information flow about the political environment in which Freddie Mac was operating.

And so, I gave it a lot of thought. I discussed the matter with my team. And we thought that rather than pick -- that any rule that was completely subjective that I would come up with myself about what

Steven P, Feinstein, Ph.D

kind of information should be moving the market would be open to criticism because it would be highly subjective, and it's important to have an objective rule that could be replicable, and the objective rule had to take into account the financial as well as the political news flow for this company. And it made sense to let the news media choose which events were high news flow days and which events were low news flow days.

I then looked back at our files of news articles and saw that there's 2,900 articles, not that just mentioned Freddie Mac -- there's actually more than that that mention Freddie Mac -- it's 2,900 that Factiva identifies where Freddie Mac's the subject of the articles. So it's quite extensive news coverage.

And if I would pick every one of those dates, it wouldn't be separating high news flow from low news flow. They'd all be picked. All dates would be considered news dates.

Steven P, Feinstein, Ph.D

So in order to run the test, I needed some rule that would separate days and events into, like, extraordinarily high news flow versus lesser news flow.

The Wall Street Journal is a preeminent financial news source, and New York Times is the, if not one of the, preeminent news sources for everything else.

So the rule was that if both companies -- if both news sources cover an event, one could be pretty sure that this was an important event in the life of the company.

That was the process by which I arrived at that rule.

Q. And you arrived at that rule in connection with your work in this case?

A. Yes.

Q. You've never used that rule in any prior case, correct?

A. Correct.

Q. Now, the methodology that you usually use for an FDT z-test on those

Steven P, Feinstein, Ph.D

several occasions when you've done it is looking at company announcements, like earnings guidance or Form 6-K, correct?

A. Right.

Q. And here, you didn't use earnings announcements because you already knew that Dr. Hallman had studied those earnings announcements and that, if you had run a test on those announcements, it would have yielded statistically insignificant results, correct?

A. It's not the results. It was the conflict between Bajaj and Hallman that I wanted to stay away from.

I mean, Hallman had some pretty compelling arguments as to why his results were what they were and why those results should be what they were in an efficient market. I just wanted to stay out of that fray entirely.

Q. Did you form an opinion as to whether you agreed or disagreed with Dr. Hallman's opinions?

A. Yes.

Steven P, Feinstein, Ph.D

Q. What was your opinion?

A. I did look at the analyst reports for each -- well, I looked at all the analysts reports, but I reviewed -- again, in another phase of the research -- the analyst reports, specifically responding to the earnings announcement dates, and I saw that, in fact, they just were not -- they were mixed news or expected news and not the kind of news that would reasonably elicit a statistically significant response for the majority of them.

So I mean, I think, ultimately, that's consistent with his conclusion.

Q. Now, did you -- you reviewed Dr. Bajaj's report as well, right?

A. Yes.

Q. And did you disagree with all of Dr. Bajaj's conclusions or only with some of them?

A. I, frankly, don't recall. I mean, it wasn't part of my scope to rebut his report, and I didn't memorialize my opinions about his report in my report.

Steven P, Feinstein, Ph.D

I'm sure there are things I agreed with and things I disagreed with.

Q. Now, at the time you were selecting dates for the FDT z-test, you were aware that if you had run an FDT z-test on the earnings announcement dates that the results would have been statistically insignificant, right?

A. I'm not sure. Because one thing I did do, one thing I did agree with Dr. Bajaj about was that I tested using a Chow test whether there was a structural break in the data. So I did break the data at August 8, 2007, which I believe is something that Dr. Hallman did not do.

So if I were to rerun his test, it would have been different for that reason.

I know that three earnings announcement dates did show up in my z-test because they were dates that The Wall Street Journal and the New York Times each reported on. And I did find the second to the last earnings announcement date to be statistically significant, and I believe

Steven P, Feinstein, Ph.D

Dr. Bajaj did not.

Taking all that into account, I don't know specifically what the result would be.

Q. You were aware at the time that you selected dates for your FDT z-test that Dr. Bajaj had already opined that only one of those dates yielded statistically significant results, correct?

MR. MARKOVITS: Objection.

A. I thought he said two did. I thought he said two. He said two of his earnings announcements did.

BY MR. FRANK:

Q. Your memory was that Dr. Bajaj had identified two statistically significant dates among the earnings announcements?

A. That's my recollection. Yes, actually, that is what he said.

Q. Now --

A. And I think Dr. Bajaj said, no, it was only one, but...

MR. MARKOVITS: There's the confusion. He was asking about Bajaj, and

Steven P, Feinstein, Ph.D
you were just talking about Hallman.
THE WITNESS: Oh, I'm sorry.
MR. FRANK: Let's make it clear, because I think you end up testifying to something you don't believe because of that confusion.
BY MR. FRANK:
Q. So --
A. I think Dr. Bajaj said one was significant, and Dr. Hallman said two were significant.
Does that clear it up?
Q. Except for the fact that there was no pending; almost.
So it was -- before you conducted your FDT z-test and chose your dates for that test, you knew that Dr. Hallman, plaintiff's selected expert, had concluded that only two of the earnings announcement dates were statistically significant, correct?
A. Right. And he argued that the other four reasonably should not have been.
Q. Reasonably should not have been

Steven P, Feinstein, Ph.D
what?
A. Statistically significant.
Q. Now, you were also aware, before you selected your dates, that Dr. Bajaj had concluded that only one of the tested earnings announcement dates yielded a statistically significant result, correct?
A. Correct.
Q. Now, at Paragraph 137 of your report, you write, "The event study shows that for the allegation-related event, there was a strongly statistically significant price reaction to company-specific news."
Do you see that?
A. Yes.
Q. Did I read that correctly?
A. Yes.
Q. You then write, "This finding proves that Freddie Mac common stock reacted to new information, and its market was efficient and, in particular, efficient with respect to the information at issue in

Steven P, Feinstein, Ph.D
this case."
Do you see that?
A. I do.
Q. What is the information at issue in this case?
A. The disclosures that -- well, the information about the risks the company was bearing on account of its increased exposure to nontraditional higher-risk loans, its ability to analyze loans and detect fraud, its capital adequacy, its adherence to underwriting standards, and the impact of that information on the company's likelihood of experiencing a loss such as was experienced on November 20 or announced on November 20, 2007.
Q. Now, are you aware that prior to the class period, Freddie Mac had disclosed that it was increasing its purchases of nontraditional mortgage loans and intended to continue doing so?
A. I'm aware of announcements to that effect. I'm aware of announcements that --
Q. Well, I was only asking you about

Steven P, Feinstein, Ph.D
that announcement.
I or your counsel can ask you about another announcements later.
But you're aware about announcements to that effect, correct?
A. Yeah. But it's important to also realize that in the context of countervailing assurances that what the market hears and what the market receives might not be as clear as how you phrased it.
Q. Now, when you wrote "The finding proves that Freddie Mac common stock reacted to new information and its market was efficient," are you able to draw a conclusion that, from your single-day event study, that Freddie Mac's market was efficient on other days?
A. Well, let's break it down.
I mean, from that single event, it's a demonstration that the stock did react to new information. So it is proof that the stock did react to new information.
And it's proof that the market was,

Steven P, Feinstein, Ph.D

therefore, informationally efficient on that day in reaction to that event.

There's no reason to believe that if that event had occurred one day earlier, the reaction would have been any different one day earlier, especially in light of the Cammer and Unger factors that I analyzed.

So I believe that this demonstration of market efficiency on that day is extendable to other days in the class period, all previous days in the class period.

Q. Is it your opinion -- well, strike that.

Are you aware of any academic literature that supports your opinion that analysis of a single day is sufficient to prove market efficiency over the course of a class period?

A. I mean, there aren't -- the literature presents principles and methodologies and case studies and then expects researchers to be able to adapt those to specific applications.

Steven P, Feinstein, Ph.D

So I don't know of applications that are exactly identical to this one and, in particular, this case over this period of time.

But I believe that this inference is supported by the literature, and I could be -- I can be more clear about that or expound on it just for a moment.

It's -- the literature's -- there's extensive literature on market efficiency, and the literature accepts that there are reasons for, a number -- a handful of reasons for market inefficiency. And the reasons that are often given are impediments to information flow, impediments to trading and investor irrationality.

And what we see with this demonstration, with this one event, is in conjunction with the other Cammer and Unger factor is that there were no impediments to information flow and there were no impediments to trading.

And this event shows us that, at

Steven P, Feinstein, Ph.D

least then and there, the market was not observably irrational.

So if this event allows us to rule out the three causes of inefficiency, then we can draw -- we can deduce from this event that the market over the class period for Freddie Mac common stock was efficient. And that's -- it's --

Q. Well, let me ask you --

A. I don't know of an article that lays out the syllogism that way, but every one of the principles in my argument is in the literature.

Q. Are there any particular authors, practitioners, scholars that you would identify who have written on the issue of the use of a single date in an event study proving market efficiency over a period of time?

A. Yeah. Yes. I mean, there are scholars and authors in the academic literature that draw inferences from single events all the time.

They'll observe a single episode of

Steven P, Feinstein, Ph.D

inefficiency and, therefore, make a claim that markets are inefficient.

It also follows that if you find a demonstration of efficiency, you can make a determination, a deduction, that if the structure of the market hadn't changed over the entire class period that that demonstration of market efficiency would apply to other dates as well.

Q. Can you --

A. But there are -- it is in the literature where anecdotal or episodic evidence is used to make a deduction that's more broad. That happens all the time.

Q. Can you identify for me, as you sit here today, a single textbook or article that supports the proposition that a demonstration of efficiency on one date supports a conclusion of market efficiency on other dates?

A. Well, like I said, I mean, I am reluctant to try. I'm reluctant to do so, because you're asking me to recall from memory the literature, the bibliography of

Steven P, Feinstein, Ph.D

literature, and I can't do that.

But even -- and when I get back to my office, if you want me to review the literature, I can tell you that the way the literature works is principles and concepts are tested and grounded and presented and adjudicated in the marketplace of ideas, and then it's expected that people apply these principles and methodologies to an infinite number of applications. So I don't expect to find someone who has done exactly what I've done. But I do expect to find examples of people that have done analysis and drawn conclusions similar to the manner in which I did in this.

Q. Do you think it's fair to draw a conclusion based on your single-event event study that Freddie Mac's common stock traded in an efficient market in the year 1995?

A. Based on just the single-event event study?

Q. Yes.

A. Ignoring the Cammer and Unger

Steven P, Feinstein, Ph.D

factors and ignoring and study of Cammer and Unger factors that apply to 1995?

Q. Yes.

A. No, I wouldn't draw that conclusion. I wouldn't take a single-event event study in isolation, separated from all other work I've done and draw a conclusion like that. I would not.

Q. Now, include the Cammer and Unger factors.

Do you think it's fair to conclude that, based on your single-event event study and a consideration of the Cammer and Unger factors, that Freddie Mac's common stock traded in an efficient market in the year 1995?

A. Well, are you saying that if the Cammer and Unger factors that I studied for the class period were also similarly robust to the period 1995?

Q. Yes.

A. So in other words, a Cammer and Unger factor that covered the period from 1995 through 2007; that's 22 years. No,

Steven P, Feinstein, Ph.D

twelve years, right?

I think in that hypothetical, I would be reluctant to do that.

Twelve years, I would be reluctant to do that.

I expect that over the course of twelve years, I would be able to find more events to test -- more appropriate events to test. And then I would only draw a conclusion after having done that analysis to see if there are additional events to test that are in closer proximity to 1995.

Q. Assume that you just had the Cammer and Unger factors, all of which were satisfied with the exception of factor five, you hadn't run any tests.

If all of the factors are satisfied, but you run no economic tests, is that sufficient economic evidence from which you can conclude market efficiency?

A. I've thought about this question a lot.

It depends on your standard of proof, your standard of conclusion.

Steven P, Feinstein, Ph.D

I wouldn't say I'm 100 percent absolutely iron-clad sure. But I would certainly -- I would probably say -- I would say if all the Cammer and Unger factors were satisfied to the degree they're satisfied over the class period, I would say it's far more likely than not that that stock is trading in an efficient market even in the absence of an empirical test.

Of course, I would want to run an empirical test and see if there are demonstrations of either inefficiency, which would change my mind, or efficiencies, which would add support to the conclusion. But if there was some reason that I couldn't run an empirical test of any kind, the literature, the empirics, what we know about the rest of the financial market would support a conclusion that it's more likely than not that that stock trades in an efficient market.

Just for the record, this is

important, so I want to make sure I explain why.

We know what kind of stocks from the literature are likely to be inefficient.

I teach courses on security valuation and investments, and students ask me, where should I look for wrongly or undervalued stocks? And it's not just me, it's the chartered financial analysts curriculum has answers to this.

You look at the small stocks that are too small to be of concern to institutional investors. You look at stocks where there's very little trading, so that information is not being brought to the marketplace via the trading mechanism. You look for stocks with no analyst coverage, so that people are on their own making evaluations of what the valuation is, and you might be more right than the other investor who's operating without the support of analyst coverage.

Those are the kinds of things you look for. Those are the kinds of things

that might make a market inefficient. And those are the kinds of things we foreclose when we see that Freddie Mac handily satisfied all of the Cammer factors being large, well-covered, and actively traded with many market makers on the New York stock exchange.

Q. Now, assume the Cammer factors were met -- well, strike that.

Assume the world as you have it. You have assessed, as you have, the Cammer and Krogman factors and you've run the tests that you have.

A. Right.

Q. Was Freddie Mac's stock price a stock trading in an efficient market in the year 2000?

A. I haven't drawn a conclusion about the year 2000.

Q. What about August 1 of 2006?

A. I think that's close. I mean, I did do Cammer and Unger analysis for that period. And the two empirical tests that I ran are close enough in proximity to that

date to support the finding of market efficiency.

Q. Now, let's put aside the FDT z-test. Just the Cammer and Unger factors -- Cammer and Krogman -- am I getting that wrong?

A. Either.

MR. FRANK: They're interchangeable, aren't they?

MR. MARKOVITS: Yes.

BY MR. FRANK:

Q. So strike that.

So put aside your FDT z-test.

A. Okay.

Q. Assuming everything else is the same, can you conclude that this market for Freddie Mac's common stock was efficient as of the first day of the class period, August 1, 2006, even though your event study only tested a single date, November 20, 2007?

A. Well, I mean, I would take into account that the event study result was pretty dramatic. There's no question about it that it was news and that the news was

-- and that impacted the stock price, and that people received the news, they processed the news, the stock price reacted immediately.

So there's just no question about that that event is a very strong, stark, clear, indisputable demonstration of market efficiency.

Having said that, if I, for some reason, was unable to run any other empirical test, I would be less confident in my conclusion than I am having had the ability to run the additional empirical test.

So there are degrees of confidence. I would be less confident without the z-test than I am with the z-test.

Q. Well, you, in your report, at the paragraph we were just looking at, you state that your single-date event study proves that Freddie Mac's common stock reacted to new information and its market was efficient.

Isn't that right?

A. It does. And the degree of proof would be less based only -- if it had to be based only on that result, than if I'm able to consider the other empirical results as well.

Q. But from your perspective, the single-event event study was sufficient to prove that Freddie Mac's stock price was trading in an efficient market for the entire class period; is that fair to say?

A. No, no, it's not fair to say.

Q. Why not?

A. It doesn't say for the entire class period in Paragraph 137. It says that it proved the market was efficient and it was efficient with respect to the information at issue in this case.

I think the other Cammer and Krogman factors -- the other factors, the Cammer and Krogman factors, and the other empirical test allow one to correctly deduce that if this information had come out at an earlier day, you would have seen a similar response on an earlier day. And

if -- and we have proof for that particular day, and maybe for a period of time in closer proximity from that event.

But to extend it to the rest of the class period, the rest of my analysis is not superfluous; it's necessary.

Q. The single-event event study is not enough on its own to prove market efficiency for the entirety of the class period; isn't that correct?

A. If you mean by that eliminating consideration of the Cammer and Krogman factors, it depends on what standard of proof.

For some purposes it might be. Maybe for the court, it would be. For me to stake my reputation on, it wouldn't be.

By that's hypothetical, because in the real world, what I am staking my reputation on is I ran many additional tests: the Cammer test, the Krogman factor test and the collective test.

Q. Now, let me give you a hypothetical.

There's a manufacturing company. It

has one manufacturing plant. It trades in an inefficient market. We know that because the company doesn't meet any of the Cammer and Krogman factors because economists have tested how its stock price performs using every test of which you're aware. It is not efficient, the market in which it trades.

On a single day, the sole manufacturing plant of this manufacturing company burns to the ground; a total loss. That event gets covered in The Boston Globe and other major newspapers, including The Wall Street Journal and the New York Times.

The stock price in that company falls dramatically, such that if you tested the stock price on that date using a single-date event study, you would find statistical significance.

Is it possible that the stock price would fall in that scenario, given the fact that the market is generally inefficient?

A. It's possible it would be efficient that day with respect to that episode and

that news.

And it's -- it may be, depending on the specifics in the hypothetical, you can draw an inference that if that event had happened a week earlier, two weeks earlier, a month earlier or a year earlier, it would have -- the market would have reacted efficiently with respect to that news on those days as well.

Q. Well, for purposes of my hypothetical, the stock is trading in an inefficient market where generally material news does not affect the stock price.

Fair enough?

A. But with respect to information about a fire, it suddenly becomes efficient is what you're saying?

So that's how your hypothetical works. It's inefficient, but with respect to a certain category of news, it is efficient.

Q. Well, let's change the hypo slightly.

A. Okay.

Steven P, Feinstein, Ph.D

Q. A manufacturing company, trading in an inefficient market. The manufacturing facilities burn to the ground.

Is it possible in an inefficient market for the stock price to decline in a statistically significant way upon the reporting of that event?

A. Well, the definition of "inefficiency" is that people ignore information. They disregard material information. It's overlooked. It's too small. Nobody really cares.

It's -- and it's unlikely that you would see a significant stock price reaction if the stock is overlooked and disregarded by the marketplace.

On the other hand, if you do observe that it's -- that people care about this company when this kind of information's available, that would be a demonstration that the -- that that company, while it may be inefficient with respect to other information, is efficient with respect to that kind of information.

Steven P, Feinstein, Ph.D

Q. Is it not possible for securities that trade in inefficient markets to sometimes, but not always, respond appropriately to material news?

A. It's possible. And that's why testing market efficiency, I run a battery of tests. I don't base my decision on only one result. Each result contributes or -- contributes to whatever the conclusion may be, one way or the other.

Q. Now, having run the tests that you ran, is it possible for you to conclude that Freddie Mac's common stock traded in an efficient market in July of 2006?

A. I didn't test for July of 2006.

I -- if I were asked to test for July of 2006, I would run all the tests that I ran over that extended period. I would look at Cammer factors, Unger and Krogman factors, and see if there also were good candidates for empirical testing in that additional month.

I started my analysis in August of 2006.

Steven P, Feinstein, Ph.D

Q. So having run the tests that you ran, you believe you can conclude that Freddie Mac's common stock traded in an efficient market in August of 2006?

A. Yes.

Q. Now, you didn't test any dates in August of 2006, correct?

A. I didn't do the -- I didn't do event study tests on dates in 2006, but I did Cammer and Krogman factor tests for 2006.

Q. When it comes to factor 5 of --

A. And the rule wasn't temporally isolate it. I didn't -- the rule wasn't I would only look for these kind of events in 2007.

The rule dictated that the events were -- appeared in 2007 and in 2006, apparently, from the perspective of the New York Times and the Wall Street Journal, was fairly calm for Freddie Mac, which is why no events showed up in that period.

Q. You didn't test in either your single-event event study or your FDT z-test any dates in the year 2006, correct?

Steven P, Feinstein, Ph.D

A. Correct, as a result of the rule not finding any dates in that period.

Q. Well, when you say "the rule," what rule are you referring to?

A. The Wall Street Journal and the New York Times coverage rule.

Q. I was asking about both tests.

A. Okay. Well, the -- for the collective test, the New York Times and Wall Street Journal media coverage test. And for individual event dates, I was looking -- we already talked about what my selection criteria were: momentous red-letter dates where the news flow was such that it appeared in an unconfounded and unexpected way that would reasonably move the stock price, not just a little bit, but over the threshold for statistical significance.

And I didn't find dates like that between August 2006, actually, until the last one. The nature of this company, it's a fairly unique company.

MR. FRANK: Bill, this is a

Steven P, Feinstein, Ph.D
good time for a lunch break, if you would like to take one.
MR. MARKOVITS: That's fine.
MR. FRANK: Off the record, please.
THE VIDEOGRAPHER: We're going off the record at 12:26.

(Recess taken from 12:26 p.m. to 1:16 p.m.)

THE VIDEOGRAPHER: We're back on the record at 1:16.

BY MR. FRANK:
Q. Good afternoon, Dr. Feinstein.
A. Good afternoon.
Q. Let me turn your attention back to Exhibit 96. This is your report.
A. Okay.
Q. Do you have that before you?
A. I do.
Q. Do me a favor, turn to Exhibit 1. That's on Page 48 of your report.

Steven P, Feinstein, Ph.D
Are you there?
A. Yes.
Q. Exhibit 1 is a list of documents and other information considered; is that correct?
A. Yes.
Q. This list is incomplete; is that right?
A. That's right.
Q. You had Mr. Markovits provide to me this morning some additional documents that you had considered in connection with your report that are not on this list; is that right?
A. Right. It's one type of document. There's a number of editions of it, but it's one type of document.

(Exhibit No. 104 marked for identification.)

(Exhibit No. 105 marked for identification.)

Steven P, Feinstein, Ph.D
(Exhibit No. 106 marked for identification.)

BY MR. FRANK:
I'm sharing with you a set of documents marked as Exhibit 104.
I will represent to you that this is the set of documents that Mr. Markovits -- that you gave to Mr. Markovits and that Mr. Markovits gave to me.
A. Yes.
Q. Do you recognize the documents that are collected and marked Exhibit 104?
A. I do.
Q. Now, what are these documents?
A. This is -- these are reports -- what I believe they are is they're reports from Freddie Mac's investor relations team to management.
Q. How did they come to be in your hands?
A. These were provided by counsel.

Steven P, Feinstein, Ph.D
Q. Did you request them from counsel?
MR. MARKOVITS: Objection.
A. At some point, I did. Not specifically, but I asked if there was anything generally like this that they had, and this is what arrived.
BY MR. FRANK:
Q. Why is it that you requested documents like these documents?
A. Well, I suspected they would show what they actually do show, which is that the company itself understood that information is what was affecting its stock price over time.
Q. And do you rely upon these documents in forming the conclusions that are set forth in your report?
A. I don't -- I didn't rely on them. I don't generally rely on them, but I do -- but they do add support to my conclusion.
This is evidence or documentation that my conclusion is something that, apparently, Freddie Mac management and their investor relations team would agree

Steven P, Feinstein, Ph.D

with.

Q. And when did you come into possession of the documents that have been marked as Exhibit 104?

A. I don't recall specifically, but I do know it was prior to filing the report.

Q. And let's take a look at the first document that is collected in Exhibit 104.

This is a document that's entitled "Equity Investor Relations Monthly Update, August 2006."

Do you see that?

A. Yes.

Q. And what is it in this document in particular that you believe supports any of the conclusions that you've reached in your report?

A. (Witness reviews document.)

It's Page 5 with -- I guess the Bates number 630 -- is a price chart, a volume chart and price chart, and it's annotated with various price movements pointed out in an information explanation for why the price moved on those days.

Steven P, Feinstein, Ph.D

Q. Is there any other information in this August 2006 document that you believe supports any of the conclusions you've drawn in your report?

A. Well, what I said was -- the main thing that I recall, and how it -- how I recalled that it supported my conclusion.

But reviewing the document -- well, Page 6 talks about how the analyst coverage -- it talks about analyst coverage. I mean, that just supports what I found about analyst coverage that was extensive.

But it says specifically in this particular month's version or edition, "Credit Suisse and Merrill Lynch downgrade Freddie Mac stock to hold in early June based upon concerns over increased regulatory risk, potential portfolio caps, and delayed time frame to return excess capital to shareholders."

So, again, it's attributing valuation impacts to information. It's another page in the document that does

Steven P, Feinstein, Ph.D

that.

Q. Now, you don't reference any of the reports that are set forth in Exhibit 104 anywhere in your report, correct?

A. That's right.

Q. And you didn't include them on Exhibit 1 of your report, right?

A. Well, that was -- that was an oversight. It should have been included.

Q. Were there any other documents or other information that you considered that you did not include in Exhibit 1 as a result of an oversight?

A. Not that I'm aware of.

Q. And when did you come to realize that you had failed to identify the documents collected in Exhibit 104 as among the documents that you considered and listed in Exhibit 1?

A. Yesterday, while preparing for the deposition.

(Exhibit No. 105 marked for identification.)

Steven P, Feinstein, Ph.D

BY MR. FRANK:

Q. I'm showing you a document that has been marked as Exhibit 105.

Is Exhibit 105 the article that we have been referring to today as the FDT article?

A. Yes.

Q. This is the -- is this the only academic literature on the application of the z-test to assessing market efficiency in securities cases?

A. No.

Q. What other articles would you identify that discuss the application of the z-test to assessing market efficiency in securities cases?

A. My recollection is there's an article by Hartzmark. I think it's Hartzmark and Seyhun.

Q. That's one article?

A. Yes.

Q. Any other academic literature that you're aware of that discuss the

Steven P, Feinstein, Ph.D

application of z-test for the purpose of assessing market efficiency in securities cases?

A. No, not if you mean published articles.

Q. Is this article a peer-reviewed article?

A. I believe it's not, in the sense that it's usually -- how the term's usually used.

Q. How is the term usually used?

A. Well, it's not an academic -- this is a law review article. It's not an economic or finance academic journal.

Q. And articles that are published in economic or finance academic journals are generally subject a peer-review process?

A. Right. That's right.

Q. Law review articles are not?

A. I'm not entirely sure what the review process is for law review.

Q. Now, let me turn your attention to Page 119 of the FDT article.

A. Okay.

Steven P, Feinstein, Ph.D

Q. At the bottom of Page 119, it -- the authors write, "Because stock prices move all the time, one must compare the movements in response to news stories with a control group of prices."

Do you see that?

A. Yes.

Q. And you agree with that statement, right?

A. Well, for purposes of this test, yes.

Q. For purposes of the FDT z-test, right?

A. That's right.

Q. And you did an FDT z-test here, right?

A. Yes.

Q. And then they write, "One way to do this would be to look at a sample of days in a class period, exclusive of those days alleged to be corrected disclosures and perform a news search."

Do you see that?

A. Yes.

Steven P, Feinstein, Ph.D

Q. And you did look at a sample of days in a class period in this case, right?

A. Yes.

Q. But you did not exclude those days alleged to be corrected disclosures, right?

A. From the control group, I did. It wasn't -- it wasn't in the control group.

The control group is the non-news days.

Q. Well, is it -- is a control group -- isn't the control group all of the other days in the class period other than the sample?

A. Yes.

Q. And if you look at Footnote 155, the authors write, "The examination would exclude those days in which a corrective disclosure was made because plaintiffs would normally choose a class period where corrective disclosures coincide with large negative price movements. Including those days in the analysis would bias the results."

Steven P, Feinstein, Ph.D

Do you see that?

A. Well, I see that.

Q. And do you agree with that?

A. Well, I would agree that they should be excluded from the control group, but I do not agree they should be excluded from the sample of news days that are selected by the news day rule.

Q. Isn't it fair to say that plaintiffs normally choose a class period where a corrective disclosure coincides with a large negative price movement?

A. Often, but not always. Sometimes plaintiffs think there is a large residual decline and when I do the analysis, I find that it's not.

But I think that the day should be included as an event day if the rule says it should be included as an event day and if there's good, objective foundation -- a good, objective foundation for assessing that it belongs in the news day category, that it was a high information flow day.

I do not agree that it should be

Steven P, Feinstein, Ph.D

excluded because it's a corrective disclosure.

Q. Isn't it fair to say that if economists conducted event studies that were based on solely a single date and always chose the last day of a class period in a securities case, that that would bias results in favor of a findings of market efficiency?

A. No.

Q. Why not?

A. Well, I mean, if you mean bias in the sense that it's going to produce a result that's not indicative of the underlying truth, I don't believe that's the case.

I mean, in this particular case, taking that as a hypothetical and using this case as an example, I mean, it's indisputable that that was a high information flow date, November 20, and whether there's a lawsuit or not is completely inconsequential to the determination that that was a high -- an

Steven P, Feinstein, Ph.D

unusually high information flow date and belongs in a study of high information flow dates, especially when the objective event selection rule is that it's covered -- that the event is covered by the New York Times and the Wall Street Journal.

Q. And it's your interpretation of these sentences that we read that the authors are solely referring to excluding the last day of the class period or corrective disclosure date from the control group and not from the sample or -- strike that. That was confusing.

You see where it says in Footnote 155, "The examination would exclude those days in which a corrective disclosure was made."

Do you see that?

A. I see that.

Q. Is it your understanding that the authors, in describing the examination, were describing both the selection of a sample of days as well as the control group?

Steven P, Feinstein, Ph.D

A. It's not entirely clear what they meant.

I mean, in the paragraph -- in the sentence that's footnoted, that the footnote is attached to, they're talking about the control group. But if they do mean that you cannot consider corrective disclosures in assessing market efficiency, I would say they're wrong.

I mean, that would be an area where we disagree. I accept their methodology in general but do believe that you should look at the red-letter dates in the life of the company, and if they can be objectively and indisputably identified as news dates, then it doesn't matter whether lawyers have also identified those as important dates for their purposes.

Q. Are you aware of this article discussing anywhere a single-date event study as a -- well, strike that.

Are you aware of the authors, either collectively or individually, of this article ever writing about the subject of

Steven P, Feinstein, Ph.D

assessing market efficiency through the use of an event study that evaluates a single day?

A. Well, I think they -- I know that David Tabak generally opines that single -- single-event event studies are never enough evidence. It's his belief that there's never enough dates to test -- to draw conclusions.

I disagree with him about that.

Dunbar is no longer with us. I can't tell you what he thinks.

I don't -- I don't know of any of the others opining one way or the other.

Q. Now, when it comes to a z-test, what is the null hypothesis for a z-test?

A. That the market ignores relevant information; that the market disregards information in determining the stock price.

Q. Now, is it your view that Ferrillo, Dunbar and Tabak are authorities on z-tests?

A. It depends how you define "authority."

Steven P, Feinstein, Ph.D
They wrote this article. They give credit for being the first to apply that type of test to this type of problem.
Q. And you cite this article regularly in your work, correct?
A. Yes.
Q. And you cited them in your report in this case, right?
A. Yes.
Q. And you cited the article in your declaration, right?
A. Yes.
Q. And you've cited this article in many other reports, too, correct?
A. Yes.
Q. Now, turning to your declaration, the z-test is -- you mention in Footnote 4, this is Exhibit 95, I believe, on Page 6, that --
A. My report now?
Q. Your declaration. Exhibit 95.
Do you see Paragraph 22?
A. Yes.
Q. There, it says -- I've actually read

Steven P, Feinstein, Ph.D
this sentence into the record previously. This is where you describe the z-test.
Do you see it?
A. Yes.
Q. Then at the end you drop to Footnote 4, correct?
A. Yes.
Q. And in Footnote 4, you say, "See, for example," and you list a number of textbooks or other authorities; is that right?
A. Yes. Those are authorities and citations in the statistics literature to the incidence frequency test. That is, essentially, when applied to the question of market efficiency, the z-test -- the FDT z-test.
Q. These are textbooks that you selected that are authorities that discuss the z-test, generally, but not in the context of securities cases; is that correct?
A. That's right.

Steven P, Feinstein, Ph.D
(Exhibit No. 106 marked for identification.)

BY MR. FRANK:
Q. You should have -- Dr. Feinstein, do you have before you a document marked as Exhibit 106?
A. (Witness reviews document.)
I do.
Q. Exhibit 106 is an excerpt from a document -- from a book, the title of which is "Applied Statistics for Public Policy," by Brian P. Macfie and Philip Nufrio.
Do you see that?
A. Yes.
Q. And this is one of the authorities you cite in your declaration, correct?
A. Yes.
Q. Now, if you turn your attention to Page 323, there's a section called "Sample Size."
Do you see that?
A. I do.
Q. And it says there, "In Chapter 12,

Steven P, Feinstein, Ph.D
we saw how to determine adequate sample size in order to test the hypothesis about a population proportion using a sample proportion. When testing for differences between two population proportions with two sample proportions, the necessary criteria are defined a bit differently. The following three conditions must be met for both samples to assure the sample sizes are sufficiently large enough to conduct a hypothesis test for differences."
Do you see that?
A. Yes.
Q. And then it provides three conditions, right?
A. Yes.
Q. Are you aware that your FDT z-test that you conducted in this case doesn't satisfy any of those three conditions?
A. I ran diagnostics. Actually, I had my team run diagnostics, and we determined that, based on the diagnostics, that the test is legitimate and the results are reliable.

Steven P, Feinstein, Ph.D

But I would have to review conditions 2 and 3 to answer your question for sure, but with 1, I could agree.

Q. As you sit here today, you know that you did not meet condition 1, which requires that both samples need to have at least 30 observations each, correct?

A. Right. But there are diagnostics to run to test whether the test is legitimate, robust to relaxation of these conditions and the results reliable, and those diagnostics were run. They're routinely run by my team.

Q. Well, we're going to discuss the diagnostics.

And I believe you testified a little bit about them earlier, correct?

A. Yes.

Q. You ran two diagnostics, one before you finalized your report and one after, correct?

A. Well, my understanding is my team runs the diagnostics when they run the test. I might have asked about it

Steven P, Feinstein, Ph.D

afterwards as a check, but they run the diagnostics routinely.

Q. So is it fair to say that you may not have been aware of the diagnostics, one or both of them, before you finalized your report?

A. No, that's not fair.

The way -- our procedure is they run the diagnostics when they run the tests.

When I say, run the FDT test on this data, they run that test and they run the diagnostics, bring to my attention if there's any issue with the diagnostics.

Q. Now, they never brought to your attention that there was any issue with the diagnostics; is that right?

A. Correct.

Q. Do you instruct them what diagnostics to run?

A. Yes. I mean, we've talked about it numerous times.

Q. In other cases, you've run -- is the binomial test a diagnostic?

A. No, it's a different type of test.

Steven P, Feinstein, Ph.D

Q. What are the --

A. In fact, it's different type of test that I don't think would be -- that isn't subject to these conditions either.

So, actually, you could say it's a diagnostic. If that binomial test gives the same results, then the test run on a sample size less than 30 is still going to be reliable in the z-test.

Q. What are the diagnostics that your team was instructed to run in this case?

A. Well, what they routinely run -- I don't have to tell them from case to case, specifically instruct them -- they routinely run bootstrapping and Fisher's exact test, among others.

There's a battery of diagnostic tests. Those are what I recall as I sit here now.

Q. Well, I want you to try to exhaust your memory for me.

Are there any other diagnostic tests that your team routinely runs?

A. I couldn't tell you for sure. I

Steven P, Feinstein, Ph.D

know that they are -- we've, in the past, considered these issues. And there's a way of running the tests to determine whether these issues are relevant. And they were not brought to my attention as relevant.

And as I sit here now, I could do a quick back-of-the-envelope calculation. If you use the binomial test as a diagnostic, four out of nine is supportive of the result at I reported it for the z-test.

Q. Well, you didn't run a binomial test here, correct?

You've already testified to that, I believe.

A. No. I did a report a binomial test. I didn't run the test -- I didn't describe the test as a binomial test.

But it's a simple test of calculating what's the probability of having four significant events out of a population or out of a sample of nine when the probability of each event being statistically significant is 5 to 6 percent. And it's a very, very low

Steven P, Feinstein, Ph.D

probability if, in fact, information days and noninformation days have the same dynamics.

Q. You didn't include the binomial test in your report, correct?

A. Correct.

Q. You didn't produce the calculations for a binomial test in your report, right?

A. Right. But knowing what the result is gives me confidence that this test, as I presented it, is legitimate and valid and robust, notwithstanding that it -- there aren't 30 observations in the information group.

Q. Who ran the -- well, let's back up.

Did you or your team run a binomial test in this case?

A. I -- we considered what -- we considered what the results of a binomial test would be, and it's easy to do a quick calculation, even without a computer, that indicates that these are robust and valid results.

Steven P, Feinstein, Ph.D

Q. I understand that as you sit here today, you can calculate -- you can consider what the results of a binomial test would be in your head; is that fair to say?

A. It was certainly considered during the drafting of the report as well.

Q. By whom?

A. Me.

Q. But you didn't put it in your report, because you didn't think that it was important enough to put in your report; is that fair to say?

A. That's right.

Q. Now, your team routinely runs bootstrapping and Fisher's exact diagnostics tests, right?

A. That's right.

Q. And if anything arises, they alert you to the fact, right?

A. That's right.

Q. And if nothing arises, they don't talk to you about those tests; is that correct?

Steven P, Feinstein, Ph.D

A. That's right.

Q. And so you never talked to any of your team about a Fisher's exact or a bootstrapping test, right?

A. That's not true. That's not accurate.

I mean, in preparation for this deposition, it came up and they said, yes, of course, we ran the Fisher's exact test, and the results were robust.

Q. Who did you talk to about the Fisher's exact at the time?

A. Dan Bettencourt and Miguel Villanueva.

Q. And you spoke to them about the Fisher's exact test following -- well, strike that.

When did you talk to Dan and Miguel about the Fisher's exact test?

A. Yesterday.

Q. And --

A. And they said, yes, of course it was run, and there's no issue.

Q. And did they share with you any of

Steven P, Feinstein, Ph.D

the results of the test?

A. They said there was no issue. That's the results of the test.

Q. But I assume that this is a statistical test that yields numbers; is that fair to say?

A. Right. But it's the qualitative result that I'm more concerned about.

Q. Well, allow me to be concerned both about the numbers and the qualitative result.

What were the numbers?

A. I don't recall.

Q. Did they share them with you or not?

A. Not.

Q. So it's not that you don't recall, you never knew; is that fair to say?

A. That's fair.

Q. And the Fisher's exact test yields numbers, right?

A. Yes.

Q. And the bootstrapping test yields number, right?

Steven P, Feinstein, Ph.D

A. Right.

Q. And you never knew what those numbers were, and as you sit here today, you don't know what they are, correct?

A. That's right.

Q. And a binomial test yields numbers, too, right?

A. That's right.

Q. And to the best of your knowledge, your team never provided to plaintiff's counsel in this case any of the calculations that relate to a bootstrapping test, correct?

A. Well, I'll take your word for it, but my understanding is that everything that was in our files pertaining to this case was produced.

So it's possible the test was run outside the files or on a local computer instead of the system computer.

But if you're saying you don't have it, I don't -- I don't dispute that.

Q. If I don't have it, is it possible that they weren't run prior to the time

Steven P, Feinstein, Ph.D

that the report was finalized?

A. I asked if they were run. They said they were run.

Q. You didn't get into the details of, when were they run?

A. No.

Q. Now, with respect to category 2 here, this condition, do you see where it says N-1 times P-1 and N-2 times P-2 have to be greater than 5?

Do you see that?

A. I see that.

Q. And N is -- N is, in your test, is 4; isn't it?

Isn't N-1 the number 4?

A. No, it's 9.

Q. It's 9?

A. Right.

Q. And what's P-1?

A. That's 44 percent. The proportion of the sample that was statistically significant, that's 44 percent.

Q. And can we agree that 9 times 44 percent is less than the number 5?

Steven P, Feinstein, Ph.D

A. Yes.

Q. And so as you sit here today, you can calculate that your test didn't satisfy the second criteria either, correct?

A. Yes.

Q. Now, the third criteria is going to strain my arithmetic abilities, but maybe not yours.

This says N-1 times 1 minus P-1.

Do you see that?

A. So that would be 56 percent. 1 minus 44 is 56.

Q. And is --

A. That might be more than 5. I would have to run it through a calculator.

Q. You believe it's 9 times 56 percent?

A. Yes.

Q. Isn't -- isn't a number greater than 5 -- the next number that's greater than 5 the number 6?

We can agree that a number greater than 5 is the number 6?

A. Yes.

Q. And so --

Steven P, Feinstein, Ph.D

A. 1 minus P-1, though, is 1 minus 44 percent.

Q. Bear with me.

So we agree the next number after the number 5 is the number 6?

A. Yes.

Q. And 6/9 is two-thirds, which is 66 percent, right?

A. Yes.

Q. So if you multiplied 9 by 66 percent, you would get 6, right, or 67 percent, right?

A. Yes.

Q. Well, here we're multiplying 9 by 56 percent, right?

A. Yeah.

Q. It's less than 6, right?

MR. MARKOVITS: Objection. More than 5.

A. Oh, I see. It might be greater than 5. I just -- can we check it?

BY MR. FRANK:

Q. Well, this all assumes that you're right and that N-1 is 9, correct? Is it

Steven P, Feinstein, Ph.D

possible --

A. It is 9.

Q. Are you sure?

A. Either N-1 or N-2. I mean, it depends how you define -- which one you assign to N-1 and which one you assign to N-2 is arbitrary.

Q. And in your report, when you discuss these numbers, you don't simply discuss four results out of nine; you discuss three results out of the eight as well, don't you?

A. Yes.

Q. You consider what your z-test would look like if you excluded the November 20 date, right?

A. Yes.

Q. Why did you do that?

A. To show that if you -- if someone were to make an issue of the inclusion of that last date, that the result is robust.

Q. Why did you think that someone might make an issue about the inclusion of that last date?

Steven P, Feinstein, Ph.D

A. I'm familiar with your argument.

I don't agree with it, but I'm familiar with it. It's been raised before and I've addressed it before.

Q. When you say you're familiar with my argument, what you mean is that you're familiar with the notion that economists, when they conduct z-tests shouldn't be using the last day of a class period?

A. No. I'm familiar with the fallacious argument that selection of what happens to be the final corrective disclosure of a class period -- of a proposed class period could be considered selection bias.

And as it's a fallacious argument because taking into account the nature of the information that emerged on that day, the nature of the information that transpired on that day, it's indisputable that it's not simply a spurious result, it's not an arbitrarily selected result, it's not a selection based on a reverse-event study where you firsts look

Steven P, Feinstein, Ph.D

at the results and then choose that date because you know it's statistically significant rather than you chose that date because the information flow that date was substantial.

If there was some question whatsoever about whether or not the information flow that day was substantial, then I could buy into your argument.

But there is absolutely no question that the information flow that day was remarkable and unusual, meriting that date's inclusion in these event studies.

Q. Are you aware of any academic literature that supports your view that z-tests, as applied to securities class actions, properly include the last day of the class period?

A. The principles that this decision was based on is in the literature, statistical literature as well as econometric literature, that what may appear to be -- that there is something called selection bias, and selection bias

Steven P, Feinstein, Ph.D

is defined.

This is not selection bias. And the concept of a reverse-event study and peek-ahead bias as it's sometimes called, is described in the literature. This choice of this date because of the information that came out that day does not -- is not peek-ahead bias or selection bias.

Q. Well --

A. So, I mean, the literature explains what the error is and what the error would be if someone picked that date inappropriately.

So it's clear in the literature. The literature makes it very clear what the error would be. And the information we have about that date makes it clear that what I did is not that error.

Q. What is peek-ahead bias?

A. Well, you pick the events because you know they were significant.

Now, you might pick the same events. You might have known that the events were

Steven P, Feinstein, Ph.D

significant, but if you pick them specifically because there's -- it's indisputable that there was high information flow on those days, making those days or that day appropriate for an event study, it's not peek-ahead bias.

Q. When you chose November 20, 2007 to include in your single-event event study, you knew that date was one that would yield a statistically significant result, correct?

A. Right. And I wouldn't have picked it except for the fact that also looking at what information came out that day identified that day as the most important red-letter date in the life of this company over the class period.

Q. Weren't you concerned that you would be subject to an accusation that you had peek-ahead bias?

A. Well, that's the answer to the question I gave a few moments ago. That's why I also gave the results for three out of eight.

Steven P, Feinstein, Ph.D

But four out of nine is a legitimate result, because this is not peek-ahead bias.

Q. What is selection bias?

A. The same thing, essentially, that you -- that your selection is in some way unscientific or inappropriate in a way that biases the results of the test.

Q. Are you aware of any academic literature that discusses your approach to selecting dates in this case for your z-test?

A. Sure. There's an extensive literature. There's an extensive section in the chartered financial analyst curriculum on testing and selection bias, and it describes what selection bias is and cautions against it and explains how to not fall into that error, and I followed those protocols.

Q. And the authority you just referenced discusses selecting Wall Street Journal dates and New York Times dates in an effort to select dates for a z-test like

Steven P, Feinstein, Ph.D

this?

A. No, it doesn't -- it describes principles that I applied in order to apply this rule correctly.

Q. Now, let me turn your attention to a document that we're going to mark as Exhibit 107.

(Exhibit No. 107 marked for identification.)

BY MR. FRANK:

Q. Exhibit 107 is a document entitled "Probability and Statistics for Engineering and the Sciences," ninth edition, by J.L. Devore.

Now this is one of the authorities that you cite in Footnote 4 of your declaration, correct?

A. Yes.

Q. Let me turn your attention to Page 393.

Do you see that there's a box highlighted in blue?

Steven P, Feinstein, Ph.D

A. Yes.

Q. Now, do you see where the -- it says "Test statistic value, large samples, Z equals," and then a formula?

A. Right.

Q. Do you know if that's the formula you used in this case?

A. I believe it is, but I did bootstrapping to determine that the large sample formula works with our smaller sample as well. I mean, I didn't do it, but my team did.

Q. I understand that you ran diagnostic tests.

But what I'm curious about is, do you see the sentence at the bottom of the blue box? Do you see that sentence?

A. I do.

Q. There it says, "The test can safely be used as long as MP HAT 1, MQ HAT 1, NP HAT 2, and NQ HAT 2 are all at least ten."

A. Right.

Q. Do you see that?

Steven P, Feinstein, Ph.D
A. It's a different set of criteria than was in the prior article, which shows you that there's -- I wouldn't call it disagreement among statisticians, but there's an understanding that -- that diagnostic evaluation on a case-by-case basis is called for.
Q. Well, are you aware of any academic authority that supports the view that one can properly run a z-test where the conditions set forth in either Exhibit 106 or 107 are not met?
A. Yes.
Q. What's that?
A. Well, there's procedures for that.
There's a bootstrapping to test to see if the critical values hold and that the critical values are valid in a small sample environment as well as a large sample environment.
Q. Well --
A. That's how we always conduct the test.
Q. Can you point me to any academic

Steven P, Feinstein, Ph.D
authorities that support your view that these conditions do not need to be met if you were able to satisfy the diagnostic test that you referenced?
A. Yes. Not as I sit here now, but yes, I can.
Q. Are they referenced -- are they referenced anywhere in your report?
A. No. They generally don't have to be. Usually people understand the principles and are satisfied with the principles well enough to know that it's not going to make a difference if the diagnostic test passed.
Q. Now, for your z-test, you didn't just choose a single date, correct?
A. Correct. I mean, it's the nature of a z-test, you compare two samples And it's samples that are more -- each greater than 1.
Q. Now, in constructing a z-test, I believe you testified, and it's in your report, that it's important to choose dates on which there's greater information flow,

Steven P, Feinstein, Ph.D
correct?
A. Right.
Q. Now, the dates that you chose are not actually the dates on which The Wall Street Journal or the New York Times published an article, right?
A. That's right. They are -- the Wall Street Journal and the New York Times were used to identify the date of the event, and then the date of the event is the date that's tested for the return.
Q. So, for example, if the New York Times came out with an article and said that Freddie Mac was going to be reporting something tomorrow --
A. Yes.
Q. -- and then The Wall Street Journal came out with an article two days later saying Freddie Mac reported something yesterday, in that example, you chose the date in between?
A. Well, I chose the date that the testimony before Congress actually occurred where Freddie Mac described to Congress

Steven P, Feinstein, Ph.D
what its program was for shoring up certain borrowers' mortgages.
So, I mean, the earlier date -- I mean, there was actually -- I could have put in the exhibit -- in the report the follow-up article from the New York Times or from the Wall Street Journal reporting on the testimony itself.
I mean, it would have still pointed to the day of the testimony as the day of the event.
Q. Well, let's be specific, because I gave you a bit of a hypothetical and you jumped to a particular example.
So if you turn to Exhibit 5 of your report, which I hope is Exhibit 96, if I'm doing this right.
Doctor, is it Exhibit 96?
MR. MARKOVITS: I think it's Exhibit 96, even if you're not doing it right.
A. Yes.
MR. FRANK: It depends what "it" is, I suppose.

Steven P, Feinstein, Ph.D

BY MR. FRANK:

Q. So are you looking at Exhibit 5 in deposition Exhibit 96?

A. Yes.

Q. Okay. And this exhibit sets forth the dates you selected for your z-test, correct?

A. That's right.

Q. And we see in the first line, for example, the first row, under New York Times, it says "Freddie Mac Tightens Standards," by Vikas Bajaj, 28 February 2007, correct?

A. Yes.

Q. And then under The Wall Street Journal it says, "Freddie Mac Won't Buy Some Subprime Loans," by James Hagerty and Damian Paletta, 28 February 2007, right?

A. Right. And they both refer to announcements that came out the previous day.

Q. Both of those articles were published on February 28, 2007, right?

A. Right.

Steven P, Feinstein, Ph.D

Q. But you chose the prior date because they were discussing an event from the prior date, right?

A. Right. And it was covered in other wire sources on February 27th. So the market knew about it on February 27th.

Q. So is it fair to say that you didn't use your selection criteria to identify dates where there was more -- there were more news articles or greater information flow, but rather, you used your selection criteria to identify dates where material company information was disclosed?

A. Yes, I think that's fair.

Q. You weren't looking for --

A. Oh, no, no, no, no, no, not just -- I mean, I'm looking for dates that The Wall Street Journal and the New York Times collectively or together each determined something important had happened for Freddie Mac, which necessarily is going to be an information flow date.

Q. Well --

A. I mean, information about the

Steven P, Feinstein, Ph.D

important event.

Q. You weren't choosing the day that the newspapers published their articles, right?

A. I picked the event -- the date of the events that the newspaper articles was about.

Q. And did you look at the dates that the newspaper articles actually came out?

A. Yes.

Q. And what did you determine upon looking at those dates?

A. Well, I would check to see if -- I used other sources to see if the event occurred on the 28th or the 27th. Or I also looked to see if the article was published, if it's, like, the Wall Street Journal wire edition and it's after the close, then the effective event date would be the next day.

Q. Did you apply any economic test to those other dates?

A. No.

Q. Did you consider any other selection

Steven P, Feinstein, Ph.D

criteria other than the Wall Street Journal, New York Times approach you described in your report?

A. Yeah. I sat with my team for a good long time thinking about what would be the most reasonable event selection algorithm.

Q. What were the other algorithms you discussed with your team?

A. Well, we considered using dates on which any news article was written, for example, but rejected that possibility because that would have, essentially, picked every day.

So it had to be more important news sources.

Q. Did you consider any other algorithms?

A. I'm sure we did, but didn't test any others. We decided on this one before running a test.

Q. As you sit here today, can you recall any other algorithms you considered?

A. I just did. I just explained one that comes to mind.

Steven P, Feinstein, Ph.D

Q. That's why I used the word "other."

A. Other than that. Yeah. I remember saying, hey, why don't we use the 8-Ks, and then my team reminded me that there are no 8-Ks for this company. So that didn't work.

We thought about earnings announcements, but the problem there was, like, I said it's already -- that path has already been tread upon.

No. We thought -- I mean, we brainstormed for a while, and this is what made the most sense.

And I still believe this is the best algorithm for selecting dates. And if you think there's some other dates that ought to be tested, let me know and we'll look at them together.

Q. You didn't test the earnings announcement dates, right?

A. Well, only the earnings announcement dates that were selected by this methodology. Three of them were.

If the Wall Street Journal and the

Steven P, Feinstein, Ph.D

New York Times thought that what Freddie Mac said about earnings on an earnings announcement date was not consequential enough to report, we basically agreed with the New York Times and the Wall Street Journal and felt it was an inappropriate date.

Q. Well, your methodology was that they both had to conclude it was significant enough to report on --

A. That's right.

Q. -- and they also had to write upon it within a particular period of time; is that right?

A. Well, yes.

Q. Now, since you drafted this report, have you applied this date selection methodology in any other case?

A. Not exactly this methodology, no.

Q. And since you finalized and signed this report, you have authored other expert reports on market efficiency, correct?

A. Yes.

Q. Did you identify all of those

Steven P, Feinstein, Ph.D

earlier in your deposition?

A. Yes, yes.

Q. So --

A. No. I mean, in this deposition, I identified testimonies for you. I did not seek to -- I don't recall if something was submitted where I have not yet been deposed.

Q. Well, thank you for that clarification. Maybe we'll just see if we can make it clear.

In Exhibit 96, we see on the front page of your report that it's dated June 7, 2017, correct?

A. Yes.

Q. And now some time has passed since June 7, correct?

A. Right.

Q. And have you finalized any reports on market efficiency since June 7 of 2017?

A. I would have to check my records. As I sit here now, I can't recall for sure.

Q. You testified -- well, you draft reports fairly often in these sorts of

Steven P, Feinstein, Ph.D

cases; is that fair to say?

A. Yes.

Q. It seems likely that there are other reports, but you just can't recall whether and how many?

A. I wouldn't say it's necessarily likely, but I just can't recall whether and how many.

Q. Now, you mentioned earlier that you looked at Factiva. Do you recall that?

A. Yes.

Q. What's Factiva?

A. It's a news reporting service, from which I can download news articles.

Q. And did you make any effort to identify what news sources were reporting most frequently on Freddie Mac?

A. No.

Q. So, for example, if a newspaper like the Financial Times or the Washington Post report far more frequently on Freddie Mac than the New York Times, you wouldn't be aware of that one way or another; is that right?

Steven P, Feinstein, Ph.D

A. Essentially, correct.

Q. Now in the Petrobras matter, you did an FDT z-test, correct?

A. Yes.

Q. You didn't use this news selection approach there, right?

A. Correct. They had 6-Ks.

Q. Well they don't have 8-Ks, right?

A. Right, but they have 6-Ks. Freddie Mac has neither.

Q. Well, Freddie Mac -- 6-Ks are the form in which a foreign company updates the market in an equivalent way as an 8-K right?

A. Yes.

Q. What is an information statement supplement? Do you know?

A. Well, my understanding is that was, essentially, their financial reporting, financial results.

Q. Are you aware of whether or not Freddie Mac also used supplements to information statements as a surrogate for Forms 8-K?

Steven P, Feinstein, Ph.D

A. Well, I read them. They're -- I don't recall that that's how they used them.

(Witness reviews document.)

Q. What are you looking at --

A. I'm looking at --

Q. -- Dr. Feinstein?

A. -- the filings that I have on Page 51.

Yes, to some extent, but they're not subject to the same rules as an 8-K. I understood that there were press releases from Freddie Mac from time to time.

Q. Now, you also did an FDT z-test in Eletrobras?

A. Yes.

Q. And you didn't use this Wall Street Journal and New York Times selection method in that case either, right?

A. That's right.

Q. And as you sit here today, can you think of any case where you used -- that you're certain that you used the FDT z-test other than this case, Eletrobras, and

Steven P, Feinstein, Ph.D

Petrobras?

A. Not without checking my records.

Q. Now, to conduct an event study -- strike that.

To conduct a z-test after you select dates, you have to create a market model; isn't that correct?

A. Correct.

Q. And was your market model for your z-test the same as your market model for your single-event event study?

A. Yes.

Q. Now, in your market model, you used two estimation periods, correct?

A. Yes.

Q. Why do you do that?

A. Well, one thing that I gleaned from the Bajaj report was a suspicion that there was a structural break around August of 2007, that the price dynamics before August of -- or August 8th, I believe it was, before August 8, 2007 were different than the price dynamics afterwards.

So there's a test for that. I ran

Steven P, Feinstein, Ph.D

the test. It's called a Chow test. And in fact, it identified that the price dynamics were different.

So that's why I ran two separate -- one way to accommodate analysis when there's a structural break is to divide the data up according to the two regimes and run a regression on each separate piece.

Q. What is a structural break?

A. Its means that the price dynamics are different before than they were after that point in time.

Q. What are price dynamics?

A. What drives the -- what drives the stock price, with respect to a market factor, a peer group factor, and the random volatility factor.

Q. Now, you identified a structural break after reviewing the Bajaj report, correct?

A. Right.

Q. Did you do any independent testing of your own to identify any other structural breaks in the market?

Steven P, Feinstein, Ph.D

A. No. He had reasons for placing it at August 8th. And rather than grope around, I accepted his reasons and ran the test on the date that he stated was the structural break date.
Q. And your test confirmed that he was correct?
A. Yes.
Q. Is it possible that there were other structural breaks during the class period in this case?
A. Well, it's possible but unlikely. I mean, there was a -- there was a fundamental market-based reason for stating that there was one on August 8th, and I didn't see that kind of compelling argument for any other date.
Q. If there are other structural breaks in the class period, might that affect the conclusions that you reached in your report?
A. It could conceivably, if in fact the dynamics did change significantly and that August 8th isn't the most appropriate place

Steven P, Feinstein, Ph.D

to place the break; but it also might not.
I don't think any kind of changed econometrics is going to change the conclusion that November 20th was a date that the market reacted to the information -- to Freddie Mac's specific information. It's just too strong a result.
And the -- I would say it's unlikely. Leave it at that. I would say it's -- anything's possible but it's unlikely.
Q. And was the structural break in August due to a liquidity crisis?
A. Well, a systemic -- a systemic market liquidity crisis or a systemic market dislocation is, I believe, how other people have characterized it.
Q. Well, based on the results of your model, would you agree that the stock market was more volatile following the systemic market liquidity crisis in August?
A. Yes.
Q. What is a Chow test?

Steven P, Feinstein, Ph.D

A. A Chow test is a test to see if the dynamics have changed at a potential break point.
Q. And you conducted it because of what you had reviewed in Dr. Bajaj's report?
A. Yes.
Q. He had identified a structural break, and you wanted to confirm that or refute it, correct?
A. Exactly.
Q. And did you do a Chow test for the entirety of the class period or just for that one date?
A. That date.
Q. Is it fair to say that the evidence of a structural break in the market means that the relationship between Freddie Mac's stock and the broader market changed during the class period -- the proposed class period?
A. It can mean that. It could also mean that the background volatility has changed. It could either be that the coefficients have changed or the volatility

Steven P, Feinstein, Ph.D

level has changed.
Q. And did you do anything to determine which it was?
A. Yes.
Q. What did you do?
A. Ran the two regressions. You see them juxtaposed on Exhibit 7.
Q. And what do those reveal?
A. Well, the volatility is certainly greater after August 8, 2007 than it was before. You see that in the standard error level.
Q. What about the relationship between Freddie Mac's stock and the broader market?
A. I don't see -- just eyeballing these numbers, I don't see a significant difference in the peer index. I see a difference in the value. But looking at the standard error of the coefficient, it doesn't appear to be a statistically significant difference in the peer index coefficient and, really, the same -- I mean, I'm eyeballing it. I'm not running the formal test.

Steven P, Feinstein, Ph.D

But I don't -- I see different values for the peer index and the market index coefficient. But comparing those to the starred error of the coefficients, it's not clear that they're significant.

Q. Now, you just turned to Exhibit 7 in your report, correct?

A. That's right.

Q. Now, if you look at the -- the top of the page is the first estimation period and the bottom is the second estimation period, correct?

A. Yes.

Q. You have two estimation periods in your regression model, right?

A. Yes.

Q. And if you look at the first estimation period, what is the standard error?

A. 0.77 percent.

Q. And where -- and that is in the very first panel next to standard error, right?

A. Yes.

Steven P, Feinstein, Ph.D

Q. And if you look at the second estimation period, the standard error is 1.66 percent, correct?

A. That's right.

Q. And how do you interpret those two statistics?

A. Well, it means there's much more background noise subsequent to August 9, 2007.

Q. Would you agree that the volatility of the residual returns in the second period is more than twice that of the first period?

A. Yes.

Q. What do you think caused this increased volatility in the residual returns?

A. I didn't do a lot of analysis on that. I just accepted it for what it was.

It's possibly that just the volatility in the input data, such that we see volatility in the unexplained part of the regression output.

Q. Now, the first and second estimation

Steven P, Feinstein, Ph.D

periods have coefficients for market index of negative .081 and .328, respectively.

How do you interpret those results?

A. I'm sorry, which two?

Q. So if you look at market index.

A. Yes.

Q. You'll see under coefficient, it says negative .081?

A. Right.

Q. And then if you look at the second estimation period, next to market index, you see a coefficient of positive .328?

A. Right. Neither of those are statistically significant, which means that the significant relationship is between Freddie Mac and its peer index. That's swamping any relationship that there may be between the market index and Freddie Mac.

Q. And so what is -- what does that mean for your layperson?

A. I don't know what you mean by the question.

What it means is that what the data indicate is that Freddie Mac was moving

Steven P, Feinstein, Ph.D

more with the peer index, more closely with a higher correlation with the peer index, other financials, than it was with the overall stock market. And that it probably did have a correlation with the market index, but that was being proxied for by the peer index sufficiently that the market index relationship looked weak.

Q. When you testified that the numbers weren't statistically significant, what were you looking at to determine that?

A. On the very right-hand column, the "T" statistics, the letter "T" -- they're not -- they're nowhere close to 2.

For the early subperiod, it's negative 0.5, and for the later subperiod, it's 0.9.

Q. When you use the number 2, is that because a statistically significant result would be greater than 1.96?

A. A statistically significant relationship between an explanatory variable and Freddie Mac stock returns would be borne out or indicated by a "T"

Steven P, Feinstein, Ph.D

statistic greater than roughly -- or roughly in the neighborhood of 2, greater than 1.96.

Q. Is it fair to say that Freddie Mac's stock is more sensitive to changes in the market during the second period after August 9, 2007?

A. No, I don't -- I don't think you can drew that. I wouldn't draw that conclusion.

Q. Does the negative coefficient in the first period strike you as unusual?

A. No, because of its -- it's not statistically significant, and there's a positive relationship -- a significant positive relationship with the peer index, and the peer index is somewhat -- is a correlation with the market index. So it could be picking up its market effect through the peer effect.

Q. Can you provide an economic explanation for why your model says Freddie Mac's stock moved opposite to the market in the first period?

Steven P, Feinstein, Ph.D

A. It didn't. That's my explanation. It didn't. This is a nonsignificant result.

Q. So the fact that it's negative doesn't matter to you because of its statistical insignificance?

A. Right. The regression indicates that it's not deterministically or definitively positively or negatively correlated with the market in the first period, in a regression where the peer index also appears.

Q. Now, turning to the intercept figures.

A. Yes.

Q. I see that the first and second estimation periods have coefficients for intercept of .02 percent and negative 3.4 percent, respectively.

A. Yes.

Q. Do you see that?

A. Yes.

Q. How do you interpret those statistics?

Steven P, Feinstein, Ph.D

A. The same way. I mean, this is -- we're working with real data, and real data has a random component to it, as well as noise and measurement data. And real data's sometimes messy.

I mean, what we're trying -- that's why we run regressions, to try to ferret out signal from noise.

The noise in the data is such that these are the values, but neither are statistically significant.

Q. Does this negative intercept in the second period strike you as unusual?

A. A little bit unusual, but not terribly unusual.

It means that the data were such that the stock seemed to trend down. But again, it's not a statistically significant result at the 95 percent two-tailed confidence level.

Q. Are you familiar with pooling versus unpooling standard errors?

A. I've reviewed it, but not recently.

Q. What does it mean to pool or unpool

Steven P, Feinstein, Ph.D

a standard error?

A. I -- I'm not prepared to answer that question today. I mean, like I said, this is something that I've studied, reviewed, learned, been tested on, but not recently.

Q. Well, in terms of conducting the calculation that underlies the z-test, who actually performed that calculation?

Was it you or someone who worked for you?

A. Someone who works for me.

Q. Who was that?

A. It's Miguel Villanueva.

Q. And to the --

A. But he does it according to the directions that I've constructed with him and for him.

Q. And did you give him any directions regarding pooling or unpooling standard errors?

A. No.

Q. And did he -- did you ever discuss with him the subject of whether he was going to pool or unpool the standard

Steven P, Feinstein, Ph.D

errors?

A. No. I think it depends on what you mean by pooling or unpooling.

We have discussed -- do you mean pooling and unpooling the standard errors across the two samples, or across the two data -- I'm sorry -- the two time regimes, or the news and the non-news samples?

Q. The news and the non-news samples.

A. Right. That, we've discussed and we determined that it's not necessary in this case. Because, essentially, if the null hypothesis is that the news and the non-news samples have the same price dynamics and, in fact -- well, and you run the test under the null hypothesis, then there's no need to make adjustment for volatility.

The test is run under the null hypothesis of market inefficiency in which the two samples have -- the two samples have the same price dynamics. That's why it's not necessary to make adjustments to the volatility for the two -- to the news

Steven P, Feinstein, Ph.D

sample versus the non-news sample.

Q. When did you discuss that matter with Miguel?

A. We've -- that's something we've discussed a number of times in many cases.

Q. So was that something that you've discussed specifically in connection with this case, or simply in the past in connection with how to perform an FDT z-test?

A. It did come up. We've discussed it in the past, and it did come up again in this case. I'm not exactly sure what motivated it to come up in this case, but we did.

Q. Did you raise it with him, or did he raise it with you?

A. I don't recall.

Q. And how long did your discussion regarding pooling or unpooling last?

A. No more than 20 minutes; 15 or 20 minutes.

Q. And what did you say to him, and what did he say to you about the subject?

Steven P, Feinstein, Ph.D

A. I said that in this context, because the null hypothesis -- I explained to him exactly what I explained to you just before: that if, in fact, the data are such that the volatilities are significantly different between the news and the non-news, well, then that proves the market is reacting to news and that there's some -- that there's a difference. That would -- if defense experts would say, we have proof that the volatilities in the two samples are different, well, then they would have proved market efficiency because they would have proved that the information is impacting the stock price.

So it's just not a necessary adjustment for this application.

Q. What is a standard deviation?

A. It's the square root of the average squared distance between each observation and the mean.

Q. And what is a standard error?

A. It's the estimator of -- well, in this case, it's the estimate of the

Steven P, Feinstein, Ph.D

dispersion in the residuals from the regression.

Q. Isn't it fair to say that standard errors can vary considerably based upon sample size?

A. Well, if you've changed the sample size, you're changing the data that you're estimating over, so they may.

I have a section in the report where I describe the choice of estimation period, and the literature specifically says that in an event study, you can choose -- there are three generally accepted periods: A period that straddles the event, a period that precedes the event, or a period that's subsequent to the event.

What I did is consistent with what's done in event study testing.

Q. Well, in your z-test, you look at two populations, correct?

A. The news versus non-news.

Q. The news versus non-news?

A. Right.

Q. Right?

Page 258

Steven P, Feinstein, Ph.D

A. Right.

Q. And the news population you look at is a total of nine dates, correct?

A. That's right.

Q. The non-news population you look at is a total of two hundred -- I'm sorry -- 321 dates, right?

A. Approximately, right.

Q. Two very different sample sizes, correct?

A. Right.

Q. And those two different populations had different standard errors, correct?

A. Well, if they do, then that's proof that information is impacting the stock price.

If the -- if there's greater dispersion in a sample of days where the stock is being impacted by news than there is in a sample of days where there's not as much news or not as much news flow, that's proof that the market is not disregarding news but, in fact, is reacting to the news.

Q. Isn't it possible that the

Page 259

Steven P, Feinstein, Ph.D

differences are explained, in part, by the sample size differences?

A. Well, that's why you -- that's the reason -- no. No, if you've run an F-test and an Ansari-Bradley test and determined that these are statistically significant differences in dispersion.

Q. And you didn't run an F-test or an Ansari-Bradley test in this case, correct?

A. Well, you can't run the Ansari-Bradley and the F-test across two regressions with a structural break. I can do it on each, but I couldn't do it on the entire class period because of the structural break, which is why those test results are not in the report.

Q. And you didn't run it either way, right?

A. I don't know what you mean.

Q. Well, you said that you could -- you couldn't run it over the entire class period, but you could do it over each estimation period; is that what you said?

Page 260

Steven P, Feinstein, Ph.D

A. No. Well, yeah, you -- since we don't have one regression, we have two regressions, you can't run the Ansari-Bradley test and the F-test over the entire class period.

Conceivably, you can run it over each subperiod, except now you're talking about a very small sample. It's -- you're looking at dispersion among -- well, in the second period, for example, it's almost meaningless to say we're looking at a measure of dispersion across three dates. It's just not a meaningful test.

Q. Why not?

A. Because it's -- it's a measure of -- the test is to see whether the dispersion among the news days is different from the dispersion among the non-news days. But if the news days -- if you've restricted it to only the post August 9, 2007 data, there's only three news dates in there. And dispersion among three days is just not as meaningful -- is not as meaningful a concept as it would be if it were over nine

Page 261

Steven P, Feinstein, Ph.D

days.

Q. At some point, sample sizes become too small to be meaningful?

A. No. At that point, sample sizes become too small to run a test to see if the standard deviation differences are significant.

Q. And for that reason, you didn't run an Ansari-Bradley or an F-test?

A. That's right.

How about a break?

MR. FRANK: Sure, sure.

THE WITNESS: Is this a decent time?

MR. FRANK: Sure. Any time.

THE VIDEOGRAPHER: We are off the record at 2:33.

(Recess taken from 2:33 p.m. to 2:46 p.m.)

THE VIDEOGRAPHER: We are back on the record at 2:46.

Steven P, Feinstein, Ph.D

BY MR. FRANK:

Q. Dr. Feinstein, isn't it fair to say that when sample sizes are similar, statisticians typically employ a pooled estimate of the standard error based on both populations?

A. I would have to see the specific application. I don't think that's correct or accurate, generally.

Q. What do you think is wrong about it?

A. I just don't think it's accurate. I mean, it depends on the application.

Q. When do statisticians use an unpooled approach?

A. Can you define your terms, what you mean exactly by a pooled approach and an unpooled approach?

Q. Well, are you not familiar -- I thought you had -- strike that.

Didn't you discuss the issue of pooling with Miguel from your office --

A. Yes.

Q. -- in connection with this matter?

Steven P, Feinstein, Ph.D

A. Well, I told you what we discussed was whether it was necessary to make an adjustment to the volatility estimated for the news sample on account of it, perhaps, being different from the volatility of the non-news sample and determined that it was not necessary.

So, if that's what you mean by pooling and unpooling, then your question doesn't quite make sense.

It's -- if you mean something else by pooling and unpooling, I would need to know.

Q. Well, did you discuss with Miguel the issue of pooling the standard errors in connection with the calculation underlying the z-test?

A. Pooling the standard errors from the two regressions, each run on a different part of the class period? That's what you mean?

Q. No. I'm talking about -- well, strike that.

When you were speaking to Miguel,

Steven P, Feinstein, Ph.D

did you actually use the word "pooling" or "unpooling"?

A. No. That's why I clarified before I gave my answers before to see if that's what you were referring to, that issue.

Q. You discussed with him whether any adjustments needed to be made given the two different estimate periods in the regression model?

A. No.

Q. What did you discuss with him that you were testifying about earlier?

A. Whether an adjustment needed to be made, given the two apparent volatilities between the news and the non-news sample.

Q. And if someone were to ask you about the subject of pooling standard errors, you would say, I don't really know what you're talking about; is that fair?

A. Well I wouldn't say that I don't know econometrics or that I don't know -- I would ask them, well, what part of econometrics are you referring to? Are you talking about panel data? Is that what

Steven P, Feinstein, Ph.D

you're asking about? I mean, is it a panel data approach? Is it a -- are you talking about a GARCH model? What exactly are you asking about? Define your terms. By pooling and unpooling, what do you mean?

Q. Well, isn't the z-test a formulaic calculation?

A. Well. No, the calculation of the Z-statistic is formulaic, but its application and its subjecting to diagnostics requires some judgment and analysis and considerations.

Q. And when you calculate the Z-statistic, do you need to take into account the standard errors for the two populations you're comparing?

A. I'd have to review that.

Q. Do you recall --

A. To check that.

Q. -- whether or not the standard error is one of the variables in the Z-statistic formula?

A. Oh, this is the standard error of the -- let me check. Let me check.

Steven P, Feinstein, Ph.D

Q. What are you looking at?

A. Well, we have it here, the formula.

(Witness reviews document.)

Q. Just to be clear, sir, what are you looking at?

A. It's Exhibit 106.

Q. Is that the "Applied Statistics for Public Policy" article excerpt?

A. Yes.

It's not. It's -- the Z-statistic is given on formula 13.1 there, and it's a function of the proportions of each sample that are significant, the proportion of the total sample that's significant -- of the combined samples that are significant, and the sizes of the samples is the Z-statistic, and that's --

Q. Are you looking at Figure 13.1 that's under the heading "The Pooled Standard Error of a Proportion"?

A. Yes.

Q. And are you familiar with the notion of an unpooled standard error of a proportion?

Steven P, Feinstein, Ph.D

A. (Witness reviews document.)

Well, what's here is the formula for the Z-statistic, which they're also calling the pooled standard error of proportion.

Q. And if I ask you to describe how the pooled standard error of a proportion differs from unpooled standard error of a proportion, could you do so?

A. I would want to review the literature first and the articles.

Q. But without reviewing any literature or articles, are you able to do so, as you sit here today?

A. I want to be real clear. It's not necessary for running the z-test. The formula for the z-test is here, and this is the formula that I used, and it does not require the calculation -- it does not -- what it says is that it's the pooled standard error of proportion that's calculated.

The unpooled is not an element of the test, according to this article -- according to this chapter.

Steven P, Feinstein, Ph.D

As I sit here now, I can't provide a dissertation on the difference between pooled and unpooled standard error calculations.

Q. I'm not going to pretend I can either.

So I just want to understand whether you know the difference between a pooled standard error of a proportion and an unpooled standard error of a proportion?

A. I couldn't elaborate or explain it or provide a dissertation on it as I sit here now. But I can tell you that for purposes of running the z-test according to the sources, it's irrelevant.

Q. Well, putting aside its relevance, isn't it fair to say that you ran the pooled standard error -- well, let me put it that way.

Putting aside whether it's relevant or not, we can agree that the formula you used was the pooled standard error of a proportion, correct?

A. That's right.

Steven P, Feinstein, Ph.D

Q. You did not use the unpooled standard error of a proportion, correct?

A. Correct.

Q. And you --

A. I may have considered it in the context of the discussion I described before, which didn't assign those labels to it, but I didn't calculate a variable that I termed, during the time of my calculations, the unpooled standard error.

Q. And you referred to a conversation that you had had with your colleague, Miguel, correct?

A. That's right.

Q. And you -- during that conversation, which lasted 15 to 20 minutes, you didn't use the terms "pooled" or "unpooled," correct?

A. That's correct.

Q. And you, actually, aren't certain that what you discussed was the decision as to whether or not to run the calculation in a pooled manner or unpooled, correct?

A. Only because I haven't heard from

you what you mean by "pooled" and "unpooled."
I know what I meant when I was having the discussion, but I don't know what you mean when you use those terms.
Q. Well, when you were having the discussion, you didn't use the terms "pooled" or "unpooled," correct?
A. Correct.
Q. And looking at this text, we see that it's a pooled standard error of proportion, correct?
A. Yes.
Q. And you don't really know what the unpooled standard error of proportion is, right?
A. It's not here. It's not written here. It's not relevant to this test.
And I may know what it is, if -- I can possibly tell you my experience with working with it once you show me what, you know, the source that describes what we're talking about.
Q. Well, you don't --

A. I mean, I don't want to go on the record testifying that I don't know anything about pooled and unpooled, if I don't know what you mean by pooled and unpooled.
I may well very know -- I may very well know a lot about pooled and unpooled standard errors once you explain to me what you're asking about.
Q. I --
A. I mean, I can go through my credentials and tell you --
Q. I'm sure --
A. -- where I've had to pass exams in quantitative methods, where I taught courses in quantitative methods, oral and written exams in order to get my Ph.D., where I'm sure I covered those aspects of quantitative methods in econometrics.
But until you tell me what you're asking about, I can't tell you -- I can't help you understand it better.
Q. Well, let me ask you this question: What is an unpooled standard error of a

proportion?
MR. MARKOVITS: Objection. Asked and answered.
A. I don't know what you mean by the question.
If you direct me to a source where they define the term or if you can define the term for me, I can help you understand it better.
I can explain to you what I know about it and what I don't know about it.
But until we know what we're talking about, I can't do that.
BY MR. FRANK:
Q. Do you know -- strike that.
Do you have the FDT article?
A. I should. Here it is. Yes.
Q. Let me turn your attention to Page 119. Okay?
So Page 119 through 122 is a section of this article where FDT discussed the FDT z-test, correct?
A. Yes.
Q. And they, actually, have an example

of an FDT test that they ran, correct?
A. Yes.
Q. And do you know whether or not FDT used the same formula that you used in your z-test calculation?
A. (Witness reviews document.)
Well, I always assume so. I mean, they say they're using a z-test for comparing the incidence rate.
But they don't actually -- they don't have their formula for the Z-statistic in their article. They just allude to it. They allude to using the Z-statistic.
Q. You used the formula that was set -- that is set forth in Figure 3.1 of the Applied Statistics textbook, correct?
A. Right.
MR. MARKOVITS: 13.1?
THE WITNESS: That's right.
BY MR. FRANK:
Q. 13.1?
A. Yes.
Q. And you don't know whether they used

Steven P, Feinstein, Ph.D

that formula or another formula; is that correct?

A. Because they don't present -- because they don't present their formula, yes.

Q. Well --

A. But they say they used the Z-statistic, and the Z-statistic is defined in the sources.

Q. Well, is it fair to say that you don't know whether they used the pooled standard error of a proportion or the unpooled standard error of a proportion?

A. Without defining our terms, that would be fair to say.

Q. Well, let me define our terms.

Do you have the "Applied Statistics for Public Policy" textbook before you?

Right under your forearm.

I'm sorry, Exhibit 105.

A. Okay.

Q. We were discussing before Figure 3.1, correct?

A. Yes.

Steven P, Feinstein, Ph.D

MR. MARKOVITS: 13.1.

MR. FRANK: 13.1. Thank you, Mr. Markovits.

BY MR. FRANK:

Q. Just so the record's clear, we're looking at Exhibit 106, which is the "Applied Statistics for Public Policy" textbook excerpt.

Do you see that?

A. I do.

Q. And on first page of the text -- it's excerpted -- which is Page 322 of the textbook, we see Figure 13.1, correct?

A. Yes.

Q. And that has a formula that is under the section heading entitled "The Pooled Standard Error of a Proportion."

Do you see that?

A. Yes.

Q. And is it your understanding that that formula is the pooled standard error of a proportion?

A. Because the authors define it as such, yes.

Steven P, Feinstein, Ph.D

Q. And that is a formula that you used for purposes of your FDT z-test in this case, correct?

A. Yes.

Q. And is it fair to say that you do not know whether or not FDT used that formula in connection with their z-test that appears in their law review article?

A. (Witness reviews document.)

Well, they don't say one way or the other. They do say that they calculate a P value based on the -- to determine whether there's a statistically significant difference between the incidence rates.

They do say in Footnote 158 that they allow -- the test examines whether the means of the two samples with potentially different variances are the same. So that may be relevant to our discussion. I determined that it was not necessary to run the test under the assumption or under a null hypothesis that would allow the two variances to be the same.

My analysis is that if it's

Steven P, Feinstein, Ph.D

stipulated that the variances are different, then that's akin to accepting the assumption that the price dynamics of the news sample is different from the price dynamics of the non-news sample.

So, I think 158 might be a relevant factor in deciphering whether they use a different Z-statistic than what's in Exhibit 106.

But if they do, and I ran my test differently, I still maintain my way is correct, given what we're trying to test.

Q. To the extent that Footnote 158 suggests that the two samples should not be run using the pooled approach that you used, you disagree with FDT, the authors of the article; is that fair to say?

A. Well, we haven't established that they did use a different statistic. But if they maintain that you must use a different statistic, I would disagree.

Because that stipulated point would prove what the entire test was designed to examine, which is the news days have

different price dynamics than non-news days, which indicates that news and information matter, which is the essence of informational efficiency.
Q. You believed that you had no choice but to calculate your Z-statistic in the manner you did?
A. No, I never said that.
Q. Did you have a choice?
A. Oh, I could have done it a different way, but I just didn't think a different way was appropriate.
Q. Well, when you say "appropriate," do you mean incorrect, or is this a choice among two acceptable approaches?
A. I think the -- well, I mean, both may be acceptable to some degree. But I think what's more acceptable is the stronger test, which would be the way I ran it, not making an adjustment for potentially different variances in the two samples. Because under the maintained null hypothesis, the dynamics are the same.
Q. Is it possible to replicate FDT's

analysis that's set forth on Page 121 of the FDT article?
A. Yes.
Q. Have you ever done it?
A. No.
Q. If you did it, would that reveal whether or not FDT used the same formula that you used?
A. Possibly. I'm not sure. Until I try it, I wouldn't know for sure.
Q. Are you aware of whether or not using a pooled calculation versus an alternative calculation that takes into account different variances affects your results?
A. Well, I'm sure one test is stronger than the other. So it could be -- it might reveal weakness in an alternative approach.
But the test I ran was strong enough for the purposes that it was applied to.
Q. You're not aware of how taking into account the potentially different variances that FDT identified in Footnote 158 would affect your results?

A. No. As I explained, I don't think it's appropriate, given that null hypothesis, to modify the test to account for potentially different variances.
The null hypothesis is that the price dynamics are the same between the two samples.
Q. Are you familiar with the concept of a continuity correction?
A. I've seen -- I've seen a lot -- again, it's not something I can elaborate upon as I sit here now, but I've encountered it and studied it.
Q. Well, can you explain to me what it is?
What's a continuity correction?
A. No, not as I sit here now. It's not something I came prepared to do today.
Q. Is it your opinion that you can calculate damages in this case?
A. Yes.
Q. It's your view that the alleged misrepresentations in this case impacted the price of Freddie Mac's stock?

A. No, that's not my view. No.
I haven't done a loss causation analysis yet or a damages analysis. So I haven't arrived at that -- an opinion on that topic one way or the other.
Q. Well, how can you calculate damages if the alleged misrepresentations in this case didn't impact the price of Freddie Mac's stock?
A. Well, the methodology would show that there are no damages.
I mean, a calculation of damages might turn up a value of damages being zero. I just don't know yet, since I haven't done the calculations yet.
Q. What is your understanding of the allegations in this case?
A. We actually went through that earlier today.
The allegations are that the company, Freddie Mac, concealed from the public information about its exposure to nontraditional high-risk -- higher-risk loans and mortgages; concealed from the

Steven P, Feinstein, Ph.D

public its -- the level of its competence in and system's ability to detect fraud and analyze loans; concealed from the public that it had deviated from adhering to stated underwriting standards for the loans that it was acquiring and investing in; and concealing information about its capital adequacy.

Q. Now, when -- now you used the word "concealed" repeatedly in your answer.

Is it your understanding that plaintiff's claims in this case are based solely on omissions, or that there are both affirmative misrepresentations and omissions, or just misrepresentations?

A. Both. Omissions and misrepresentations. That some of what they said made other things they said misleading.

Q. Is it your view that the alleged misrepresentations and omissions are limited to the topics covered by Freddie Mac's disclosures on November 20, 2007?

A. No. I mean, my view? Or is it my

Steven P, Feinstein, Ph.D

understanding of the allegation?

Q. Your understanding?

A. My understanding of the allegation is that they're not limited to the contents of the explicit disclosures made, the announcements made; that the market -- some disclosure took the form of the materialization of the risk on that day.

Q. Have you ever heard the expression "caution loans"?

A. "Caution loans"? No, I -- I'm not familiar with the term.

Q. Have you ever heard -- are you familiar with the term C-1 or C-2 or EA loans?

A. Yes. That, I saw in the documents.

Q. What is your understanding of what C-1, C-2 or EA loans are?

A. Well, there's -- the company had a rating system for riskiness of loans, and C-1 and C-2 were at the lower end of the credit ratings.

Q. And is it your understanding of this case that Freddie Mac -- strike that.

Steven P, Feinstein, Ph.D

Is it your understanding of plaintiff's allegations in this case that Freddie Mac should have disclosed the amount of its C-1 and C-2 loans at an earlier date?

A. I don't have an opinion about that. I don't -- I haven't formed an opinion about what Freddie Mac should have done.

I formed opinions about its stock trading in an efficient market and a damage expert's ability to calculate damages in a methodology -- using a methodology common for all class members, not what Freddie should have done or shouldn't have done from either a legal or ethical point of view.

Q. Are you aware that Freddie Mac disclosed the credit characteristics of the loans in its guaranteed portfolio?

MR. MARKOVITS: Objection. Misstates the record.

A. I'm aware that that's an area of some dispute between the parties.

I don't have an opinion one way or

Steven P, Feinstein, Ph.D

the other at this point.

BY MR. FRANK:

Q. Are you aware that Freddie Mac disclosed the FICO scores of loans in its guaranteed portfolio?

A. Same answer.

Q. Which was?

A. That I'm aware that that's an area of some dispute; whether there was full, honest, forthcoming, disclosure or not.

I don't think anyone's relying on me to be a fact witness. I haven't done an independent investigation of the facts of those allegations to determine for myself whether the allegations are true or not.

If I were to calculate damages, I would be doing it on the basis of an assumption that the allegations and liability were there.

Q. Is it your understanding that November 20, 2007 represents a date on which certain risks materialized?

A. Well, again, I want to be careful with the language.

Steven P, Feinstein, Ph.D

I think the risks may have materialized somewhat before then. But the repercussions of the risks materializing were disclosed, or announced, presented to the marketplace that day.

Q. Is it possible that some of the risks that were disclosed that day -- strike that.

Is it possible that the materialized risks that were disclosed that day had been disclosed at earlier points in time?

Let me make that a little cleaner.

You understand that one of the allegations in this case is that Freddie Mac didn't adequately disclose certain risks; is that fair?

A. Yes, and certain facts.

Q. You understand that on November 20th, Freddie Mac disclosed that certain risks had materialized; is that correct?

A. I understand that's the allegation. And my reading of the news from that day supports that.

Q. Is it possible that Freddie Mac's

Steven P, Feinstein, Ph.D

losses that were disclosed on November 20, 2007 were the result of both the materializations of risks that were disclosed and the materializations of risks that were not disclosed?

MR. MARKOVITS: Objection. Calls for speculation.

A. Yes, I don't think the record's been fully developed enough to know -- for me, for my perspective, to know one way or the other.

I'm not the trier of fact in this case, but -- so I would say that from where I sit, anything's possible, and I would take all that into account if I were asked to calculate damages.

BY MR. FRANK:

Q. And how would your damages model disaggregate amounts associated with risks that were disclosed and amounts associated with risks that were not disclosed?

A. Well, there are tools for that. The -- if they were previously -- if the risks were previously disclosed, the price

Steven P, Feinstein, Ph.D

would have already -- the price of those disclosures would have already been felt, would have already been impounded in the price.

And some assessment would have to be made as to what factors that were undisclosed led to losses that were sustained and reported.

This is the kind of valuation work that analysts do all the time.

Q. When you said earlier there are tools, what are the tools that you're referring to?

A. Valuation tools, valuation models, informed by the literature on various types of information and disclosures and nondisclosures and also informed, to some extent, by the empirics of the stock price movement when the event occurred on November 20th.

I mean, analysts, investors value stocks all the time under a variety of scenarios, actual scenarios and hypothetical scenarios, and report those

Steven P, Feinstein, Ph.D

findings.

I would do the same thing with the added advantage of I get to see what happened when this information became available to the market -- perhaps, in concert with other information and other developments, perhaps -- on November 20th.

Q. So we discussed over the course of the day various tests that you used or could have used to assess market efficiency, correct?

A. Right.

Q. These tests have names, such as a z-test or a Ansari-Bradley test or an F-test?

A. Right.

Q. Or a Z -- we said z-test already. They have names, correct?

A. Right.

Q. What are the names of the valuation tools or the valuation models that you would use in this case?

A. Well, I would use the event study. I would observe to see what the stock price

Page 290

Steven P, Feinstein, Ph.D

behavior was when the information became available to the marketplace. I would disaggregate that information into pieces, and I -- and in looking at the models that analysts use, I can evaluate how these different pieces of information would affect their valuation models and would, therefore, affect the stock price reasonably.

I mean, they use the -- they use discounted cash flow models. They use valuation multiple models. The literature talks about liquidity effects. The literature talks about reputation effects.

I would include all of these factors to determine what would the stock price have been had the full disclosure occurred earlier and what impact unexpected events related to previously disclosed risks might have also had on the stock price.

I mean, I would do a careful analysis of what the market was expecting versus what they observed, and what risks they knew about and what risks they didn't

Page 291

Steven P, Feinstein, Ph.D

know about.

It's a valuation analysis. It's done every day for every stock that's traded by a large number of analysts.

Q. So I understand you would use your event study, correct?

A. Yes.

Q. And when you say you would use your event study, you're referring to the single-event event study that assessed November 20th, 2007; is that right?

A. Right, because that event study quantifies how much the stock fell after controlling for market and peer group effects. So that would be useful.

Q. You wouldn't use the study that underlies your z-test; is that correct?

A. As I sit here now, I don't see how I would. I don't want to foreclose the possibility that there may be some useful information there.

But it's -- the most useful information empirically would be the residual return from November 20th, which

Page 292

Steven P, Feinstein, Ph.D

comes out of the November 20th event study.

Q. I think you said you would use a discounted cash flow model; is that correct?

A. I could. I mean, until I get into it -- I mean, I would use all models that are available, all models that are in the literature, whatever -- you know, after the record is fully developed and we can see what the parties agree or the trier of fact has determined or what I'm instructed to assume about the facts, I would know better which valuation models were most appropriate.

But at my disposal is discounted cash flow, valuation multiple models, event studies run by other -- by academics that are reported in the literature that show what is the valuation impact of reputation effects on liquidity shocks. Those kind of things would all be relevant and at my disposal, if I were the damage expert.

Q. Now, it seems like in terms of damages, the models don't have as

Page 293

Steven P, Feinstein, Ph.D

interesting names.

Are there any names to these models so that I could -- so that I know what specific models that you're going to use?

A. Discounted cash flow. I mean, I don't know if I would specifically use the discounted cash flow model, but it's available to me to use.

Part of it has to do -- part of the determination as to which models to use would be an evaluation of what models analysts used when they wrote their reports.

My recollection is some used valuation multiples models, price earnings, cash flow, price to cash flow. Some of the parts models are often used.

MR. MARKOVITS: That's a good name, Jason.

A. So these are all at my disposal.

BY MR. FRANK:

Q. But to date, you haven't decided how you would calculate damages; is that fair to say?

A. Well, I've assessed the facts enough to know that it's possible, that there's nothing so unusual about this case that it would be impossible to calculate the value of Freddie Mac's stock in the but-for world with perfect and correct -- what plaintiffs consider correct disclosure.

But the specifics of exactly which model I would use, I have not yet determined.

I just know that I would have at my disposal all valuation models that other analysts have used to value Freddie Mac and other companies.

But I -- but it's really important to note, I have more than they do. I mean, not only can I use all the models that other analysts valuing Freddie Mac used, I also have the event study and I also have the literature on reputational liquidity effects.

Q. Let me turn your attention to Paragraph 152, Section 3 of your report.

Here you say, in Section 3 -- I'm

sorry. If you look at the fourth line -- well, we'll start at the end of the third line.

You say "That is, for each class member" --

A. I'm sorry, where are we?

MR. MARKOVITS: Page 43, small 3?

MR. FRANK: Yes, 43, Roman numeral III.

THE WITNESS: Okay.

BY MR. FRANK:

Q. The third line down, you write, "That is, for each class member, per share damages would be calculated as the difference between the inflation on the date the shares were purchased and the inflation on the date those same shares were subsequently sold, excluding any inflation dissipation caused by factors other than corrective disclosure."

Do you see that?

A. Yes.

Q. How would per share damages change

if there was a proportion of undisclosed risk?

A. What do you mean?

The allegation is that there was a proportion of undisclosed risk.

Q. Well, does your proposed damages model differentiate between risks that were disclosed and risks that were allegedly undisclosed?

A. Yes.

Q. How so?

A. It would assign damages that stem from the losses from the actionable -- actionable misrepresentations and omissions that concealed risks.

Q. As between the proportion of undisclosed risk and disclosed risk, how would per share damages change if the proportion of undisclosed risk was increased?

A. Damages would go up.

Q. And how --

A. I mean, if, in fact, it's determine that those undisclosed risks should have

been disclosed.

Q. And how exactly would you exclude any inflation dissipation caused by factors other than the corrective disclosure?

A. Well, the inflation isn't dissipated by -- there's no inflation caused -- almost by definition, there's no artificial inflation caused by factors that aren't fraud related.

So I would have to focus on the fraud-related factors that were causing inflation and the fraud-related artificial inflation that dissipated upon the disclosure.

Q. When you say "the inflation dissipation caused by factors other than corrective disclosure," what do you mean?

A. That's -- you know, that's hearkening back to the Dura decision. Dura, D-u-r-a.

Even if there was artificial inflation caused by actionable misrepresentations and omissions, if that artificial inflation dissipates for some

Steven P, Feinstein, Ph.D

reason that's not a corrective disclosure, it's not recoverable is what Dura instructs.

So I would have to see, for example, I mean, I haven't decided yet, but if it's a percentage ribbon, for example, a percentage inflation ribbon, and the inflation dissipates, not because there's a corrective disclosure but rather because the stock price fell for other reasons, that reduction of inflation -- of artificial inflation is not recoverable. It would be excluded from the calculation of damages.

Q. And how would you be able to determine how much inflation to exclude?

A. Well, in that example I just gave, if there's no corrective disclosure, all of the inflation dissipation that occurred that day as a result of the stock price falling for unrelated reasons should be excluded; all of it. If it's -- if there's no corrective disclosure that day.

Q. If -- but if the stock price falls,

Steven P, Feinstein, Ph.D

does the inflation ribbon band stay the same as a general matter?

A. If it's a percentage ribbon, no. The inflation ribbon would -- the inflation would decrease. But that decrease pre-Dura, we would call it, that would have been considered damages, but post-Dura, that's not, that has to be excluded from damages.

Q. And have you excluded inflation dissipation in other cases?

A. Oh, yes.

Q. Now, in Paragraph 152, Section 1, you state that "First valuation tools, which would include event study analysis such as that described herein, and potentially other empirical analysis, if necessary, would be used to establish that the disclosures correcting the alleged misrepresentations and omissions caused the price of Freddie Mac common stock to fall."

A. Yes.

Q. Is it fair to say that you have not actually created a damages model for this

Steven P, Feinstein, Ph.D

case other than to describe your approach to damages at a broad level?

A. No, I don't think that's fair to say.

I think the damage model that I explain here -- I haven't created it. I mean, it's fair to say that I didn't create the damage model.

The damage is the damage model that's usually used by experts, myself included, and other experts in 10b-5 cases and has been accepted by courts.

The damage model is to -- is an out-of-pocket model. I didn't invent it, but it's what's been determined as applicable to a 10b-5 case.

It's a calculation of inflation, and the change of inflation over the investors' holding period is the basis of the damages, with exclusions made for dissipation that's not fraud related.

So that's the model. It's not -- that's not just a -- that is the model.

I mean, I haven't actually executed

Steven P, Feinstein, Ph.D

the model. I haven't calculated inflation yet. But I -- but I did -- I did do an examination to determine that I could.

Q. To be clear, you've not performed a damages analysis for this case beyond what you state in your report, correct?

A. That's right.

Q. And do you know if you would make any changes to the event study model in connection with calculating damages?

A. I don't think I would. But I'll certainly take into account what your experts propose. If they think there's some other type of regression that's superior to one that I wrote and ran, I would consider that. And so that it might call for a change.

I don't think that's the case. As I sit here now, I think I did it right, and I can't imagine a better way.

But if I'm proved wrong and convinced that there's a better way, I would certainly adapt.

Q. In Paragraph 155, you state that

Steven P, Feinstein, Ph.D

your damages -- your "damages methodology will take into account all relevant valuation factors and do so correctly."

Do you see that?

A. Yes.

Q. What are the relevant valuation factors?

A. Well, I don't know yet. For sure, I mean, these are -- I wrote that sentence in response, in a previous case, you know, to someone who suggested that I would make -- that I would necessarily perform valuation -- commit valuation errors.

For the record, I don't think I will. I will try to do it correctly and consistent with valuation methodologies that are generally accepted and widely used.

But, for example if there's some -- if some factor is -- if I become aware of a factor, through my research into the history and experience of this company, either my own research or something I read in the -- as this case develops, that

Steven P, Feinstein, Ph.D

impacts the valuation -- that impacts the correct valuation of the stock in the but-for world, I would take it into account.

Q. Well, what specific steps are involved in taking into account valuation factors correctly?

A. Well, what the steps are, the goal is to calculate an inflation ribbon. And the inflation ribbon is -- well, the inflation at any point in time is the difference between the observed stock price for Freddie Mac and what the stock price would have been had there been full disclosure, full and complete and correct disclosure, on that same day.

So, I mean, the allegation is that had there been full and correct disclosure, the price would have been lower.

I'll study and analyze to see if that's the case.

And in studying and analyzing to see if that's the case, I'll take into account all the things that may have affected the

Steven P, Feinstein, Ph.D

stock price on that day had there been full and complete disclosure.

Q. Now, in addition, you say, "If varying investment risk is an issue, the full set of generally accepted and widely used valuation tools will measure the valuation impact of risk, just as investors and analysts routinely take this factor in account in real-time."

Do you see that?

A. Yes.

Q. What issues arise with varying investment risk in term of your efforts to calculate damages?

A. Well, it's possible that the valuation impact of a piece of information is either greater or less earlier in the class period than it was at the end of the class period. I would take that into account.

If the -- if the disclosure of risk would have a very -- let's say a very small impact late in the class period but a very large impact on the stock price early in

Steven P, Feinstein, Ph.D

the class period, I would take that into account.

I wouldn't just necessarily assume that the change in price when the risk became known to the marketplace necessarily applies to all earlier dates in the class period.

Q. Well, how specifically do investors and analysts routinely take risk into account in real-time?

A. Well, that's how they value stocks. I mean, if it's a discounted cash flow model, the numerator is projected future cash flows, the denominator is a discount rate, which has -- and discount rate is typically higher for riskier stocks. If there's greater risk, discounting will be at a higher rate to produce lower security price.

Another way that risk is taken into account is expected future cash flows. If there's scenarios that the market is aware of in which substantial losses could be realized, the numerator or the expected

Steven P, Feinstein, Ph.D

cash flow would reflect that by probability weighting potential scenarios that are associated with different cash flows.

So that's two ways that it's taken into account.

There may be others, but at least those two address your question.

Q. Let me give you a hypothetical.

An energy company tells investors that it is certain to receive regulatory approval from the Environmental Protection Agency to build a major oil pipeline when, in fact, the company knew that the EPA was not going to approve the project.

Assume that when the EPA announces its refusal to approve the project the stock price declines by $10.

Dr. Feinstein's engaged --

A. Can I just interrupt?

Q. Yes.

A. Can I --

Q. I'm just getting to the juicy part.

A. Well, I just want to make sure that I understand the nonjuicy part.

Steven P, Feinstein, Ph.D

So the company knew that it would not be approved? Is that what you said?

Q. Yes.

A. But they told the public it would be approved?

Q. Yes.

A. And then -- and so the market expected it to be approved, the company knew it would not be approved, so that's why the stock price is inflated. And then when it's not approved, the stock price falls, and there's no disagreement among any participants about the value of that -- was it an oil refinery or a power plant?

Q. Major oil pipeline.

A. Pipeline. So there's no disagreement about what the value of this pipeline is worth. It's not like the EPA said, you can never build a pipeline, which would have a bigger effect than if they said, you can't build this specific pipeline in a small geography.

Q. Well, without adding those facts to the hypothetical --

Steven P, Feinstein, Ph.D

A. Okay.

Q. -- I will just say that when the news comes out that the EPA is refusing to approve the project, the stock price declines by $10.

A. Okay.

Q. A gentleman named Dr. Feinstein is engaged by a shareholder. He determines that the market is efficient, and the stock price fell $10 as a result of a concealment that the EPA would be declining approval.

What was the amount of the stock price inflation on the date of the misrepresentation?

A. So that's why we need to clarify the -- in order to answer the question, I need more information.

Q. What information do you need?

A. Possibly more analysis, but even more information.

So there is no disagreement among any parties -- this is what I asked before -- there's no disagreement among any parties as to what the value of that

Steven P, Feinstein, Ph.D

pipeline was?

Q. Assume that's the case.

A. And there's no disagreement about the implications of this refusal for any future regulatory actions whatsoever.

So there's absolutely no distribution among economic ramifications of the decision. The only moving part is the market's understanding of the probability.

So, like, in the real world, for any decision, two things are moving: the probability is being adjusted and updated with new information, but also so is the economic ramifications of various outcomes and scenarios.

But in your hypothetical, your unrealistic hypothetical, there's no -- there's no disagreement about the economic value of the EPA's decision.

Okay.

Q. Fair enough.

A. All right. And so, since there's no disagreement about the economic value of

Page 310

Steven P, Feinstein, Ph.D

the decision, the company knew that its stock price should have been $10 less all along.

And if -- and if -- and as the forensic analyst, I would likely -- I mean, probably with more time, I would think about it a lot longer than this -- but as a forensic analyst, I would estimate what would other people have forecasted or estimated the price to be, what would they have assigned as a price? And it seems reasonable from your hypothetical that it would have been $10.

So the inflation would be $10.

Q. And let's change the hypothetical slightly.

A. Okay.

Q. We'll agree with all the caveats that you just shared with me. All else being equal, we're only going to change the following facts:

When the company tells investors that it is certain to receive regulatory approval from the EPA, in fact, the

Page 311

Steven P, Feinstein, Ph.D

probability of approval was only 90 percent and the company knew it. It concealed the 10 percent risk that the EPA would deny approval.

Assume that risk materialized and the stock price declined by $10, just like we discussed earlier.

In that case, what is the -- all else being equal, what was the inflation of the stock price at the time that the misrepresentation was made?

A. Well, again, it's -- I want to point out why the hypothetical is highly unrealistic. It's because in the real world, there is a range of -- there's a distribution and a range of potential economic repercussions or implications of the decision.

There's reputation effects that have to be considered that, you know, the -- well, actually -- that's why it takes more -- it's more analysis than I can do just sitting here right on the spot.

It would have to take into account

Page 312

Steven P, Feinstein, Ph.D

reputation effects. It would have to take into account that the EPA's decision -- well, we would have to take into account why the EPA decided that and whether the reason for EPA's rationale for rejecting the pipeline applies to other projects at the company, future projects of the company, the company's viability, the company's ability to operate as an oil pipeline company going forward.

So it's more complicated in the real world.

But in the hypothetical, in the extremely unrealistic hypothetical, if, in fact, there's absolute 100 percent agreement, not only among all parties involved but all -- that all parties know with certainty, which they generally don't in the real world, but if they knew in this hypothetical what the stock price -- what the valuation implication of the EPA's decision was, then the inflation would be less than the full $10 in that example.

Q. And in the --

Page 313

Steven P, Feinstein, Ph.D

A. But the real world is more complicated because you have two distributions. You have uncertainty about the probabilities. You also have uncertainty about the nature of the economic implications of the EPA's decision.

When people see the stock price fall $10, it may actually be the case that the prior inflation was greater than $10 because maybe the EPA said, your pipeline is being rejected, but this has no bearing on your future business and we may very well revisit your case in six months after you do some clean-up operations, in which case the price dropped less than what the inflation would have been prior to that disclosure.

Those are the kind of things that have to be analyzed in the real-world example that don't fit neatly into the hypothetical.

Q. In my second hypothetical, the company concealed a 10 percent chance of a

Steven P, Feinstein, Ph.D

$10 loss, correct?

A. But we're assuming in that second hypothetical that everyone knew it had to be a $10 loss. It couldn't be more. It couldn't be less.

And the in the real world, when you observe the $10 loss, you have to take into account that the loss might have been 20, it might have been 50, it might have been a $100 loss. So $10 might, actually, be relatively good news.

Q. Let me be clear, if I wasn't before. I'm asking you a hypothetical.

A. Right.

Q. I'm not asking you about the real world.

A. I understand that you're not asking me about the real world.

Q. So let's -- let's just be clear, so we have no confusion, that we'll be clear when we're talking about the real world and we'll be clear when we're talking about hypotheticals.

A. Okay.

Steven P, Feinstein, Ph.D

Q. So in my hypothetical, there's only a 10 percent chance of a $10 loss, correct?

A. Right.

Q. And it wouldn't be fair to calculate the inflation amount associated with the misrepresentation as a $10 inflation, correct?

A. Right, but -- yes, because everyone knows that the maximum possible extent of the loss was $10 and it could not conceivably been higher.

If that $10 turns out to be on the smaller side of the range of possible losses, then the inflation earlier might have been greater than $10, even if the probability wasn't 0/100, but 90/100.

Q. Now, how does your proposed damages model take into account the differences between my first hypothetical where the entire loss is -- the entire risk of loss is concealed, and my second hypothetical where only a portion of the risk of loss is concealed?

A. From investigation and analysis of

Steven P, Feinstein, Ph.D

what caused the loss.

How much was foreseeable given what was known and what was -- and how much would have been foreseeable given what was concealed? That's the kind of analysis that investors and analysts do all the time.

Q. Well, you understand that this is a case that involves a loss that was disclosed on November 20 of 2007, correct?

A. Right.

Q. And you understand that you may be faced with a prospect, if you're going to calculate damages, with, disaggregating the amount of the loss that was associated with risks that were disclosed and the amount of the loss that's associated with risks that were allegedly not disclosed, correct?

A. For sure. I never said it would be easy, but I don't believe it's impossible.

Q. So I'm just trying to understand how you would do it.

A. By investigating what caused the actual loss and whether the factors that

Steven P, Feinstein, Ph.D

caused the actual loss were risks that were previously disclosed or risks that were undisclosed.

Q. And how will you -- so how will you calculate those differences?

A. Again, I mean, just as a preamble, let me say that there's widely used generally accepted methodology for doing exactly that.

If you look at analyst reports, they often provide a table of potential scenarios based on the range of possible outcomes given risks as they understand them to be.

And since they're able to construct that table, they're also able -- I would be able to use their methodologies and construct a table that's different on account of a different set of risks that may have been -- that -- in the but-for world would have been disclosed.

So if other analysts are able to produce a table of scenarios and outcomes given known risks, I would -- I could use

Steven P, Feinstein, Ph.D

the same tools, or another damage expert can use the same tools to prepare an alternative table and then compare the two.

But the way that's done is to look at -- it's to get into the weeds and get into the analysis of what caused the actual loss and how much of that loss was caused by known risks versus unknown risks.

Did the -- did the -- did defaults and losses on Freddie Mac's retained portfolio -- for example, can you estimate that they were outside the norm of what would have been reasonably expected, given the nature of the risks that they had previously disclosed?

That's the question that would have to be investigated.

Q. What --

A. And based on the answer to that question, you can differentiate between losses that were caused by known risks versus losses that were caused by concealed risks.

Q. And what are the names of the

Steven P, Feinstein, Ph.D

economic -- the econometric tools that you'll use to disaggregate those two kinds of losses?

A. Valuation analysis. This is valuation analysis, news analysis, information analysis, scenario analysis.

Q. I'm showing you a document that was previously marked as Exhibit No. 28 in this case.

Exhibit No. 28 is the company's annual report for the year 2005, which is dated June 28, 2006.

Have you ever seen Exhibit 28 before?

A. (Witness reviews document.)

Yes, I believe so.

Q. Did you review Exhibit 28 in connection with preparing your report?

A. (Witness reviews document.)

No, this is 2005. Exhibit 28 is the 2005 annual report. I read the 2006 and 2007.

Q. So you didn't read the 2005 annual report?

Steven P, Feinstein, Ph.D

A. According to my Exhibit 1, that's correct.

Q. Well, I draw your attention to page -- to the first page of the information statement that comes after the colored pages, and on its face it says, "Information Statement and Annual Report to Stockholders."

So if you flip past the -- the pages that are printed in color, you'll see the first page.

A. Oh, okay.

Q. Are you there?

A. Yes.

Q. And you see at the bottom, it says this information statement is dated June 28, 2006, correct?

A. One moment.

(Witness reviews document.)

Okay.

Q. And you understand the class period here begins August 1, 2006, correct?

A. Yes.

Q. So this is information that was

Steven P, Feinstein, Ph.D

publicly available prior to the class period, correct?

A. Yes.

Q. Now, let me turn your attention to Page 65. Actually, I'll turn your attention to Page 67.

Do you see on Page 67, there's a table that's labeled "Characteristics of Single-Family Total Mortgage Portfolio"?

A. Yes.

Q. Have you ever seen this table or a table like this table before?

A. I have seen tables like this before.

Q. And you -- did you see Freddie Mac's table describing the characteristics of its single-family total mortgage portfolio in its other information statements that you did review?

A. I actually don't recall, as I sit here now.

Q. Well, were you aware that prior to and during the class period, Freddie Mac was disclosing the data that we see listed in Table 37 on Page 67 of Exhibit 28?

Steven P, Feinstein, Ph.D
A. Yes.
Q. And you were aware that it was showing its LTV for all of the mortgage loans in its guaranteed portfolio, right?
MR. MARKOVITS: Objection. That's a matter in dispute.
BY MR. FRANK:
Q. You can answer.
A. I was going to say something along those lines, that I know what they purported to report.
I know -- I've seen printed pages like this before, but I understand that there's some dispute about how disclosive and correct that was.
Q. Do you see the section on credit score?
A. Yes.
Q. Were you aware that Freddie Mac was disclosing the loans in its portfolio and in its guaranteed portfolio by credit score?
A. I can tell you --
MR. MARKOVITS: Same

Steven P, Feinstein, Ph.D
objection, but go ahead.
A. I can tell you what I see here now. I just don't recall data -- what data similar to this I've seen for this case throughout the class period.
BY MR. FRANK:
Q. Now let me turn your attention back to Page 65.
Do you see at the bottom of the page, there's a paragraph that states, "During 2005 and 2004, there was a rapid proliferation of alternative product types designed to address a variety of borrower needs, including issues of affordability and lack of income documentation."
Do you see that?
A. I see that.
Q. Do you see it says, "While each of these products has been on the market for some time, their prevalence increased in 2005 and 2004."
Do you see that?
A. Yes.
Q. And it says, "We expect each of

Steven P, Feinstein, Ph.D
these products to default more often than traditional products, and we consider this when determining our guarantee fee."
Do you see that?
A. I do see that.
Q. And then it says, "Our purchase of interest-only and option-arm mortgage products increased in 2005, representing approximately 11 percent of our total mortgage portfolio purchases as compared to 2 percent in 2004, and we expect this trend to continue in 2006."
Do you see that?
A. I do.
Q. Were you aware of those facts when you drafted your report?
MR. MARKOVITS: Objection; characterization as facts.
A. I was aware of those words. I think they were excerpted into one of your briefs that's reported in my exhibits.
BY MR. FRANK:
Q. And how, if at all, do you expect to take disclosures like that into account in

Steven P, Feinstein, Ph.D
connection with developing your damages model?
A. Well, that's why we need the -- at this point, I need the full development of the record to see what's adjudicated as being supported allegations of concealment and -- misrepresentations and omissions.
Once I understand what the misrepresentations and omissions are to be -- which omissions and misrepresentations are to be assumed, I'll be able to conduct that analysis.
I mean, my understanding is that plaintiffs allege that there are statements that made these statements misleading or -- or gave the marketplace a different understanding of the company and that it has to be taken into account.
Once I understand from the development of the record what I'm to assume the market was led to believe -- development of the record plus my research what the market was led to believe, I can compare it to what they could have been led

Page 326

Steven P, Feinstein, Ph.D

to believe had there been more full disclosure.

(Exhibit No. 108
marked for identification.)

BY MR. FRANK:

Q. Let me turn your attention to a document that's been marked as Exhibit 108.

Exhibit 108 is Freddie Mac's press release from November 20 of 2007, correct?

A. Yes.

Q. This is the press release where Freddie Mac reported a third quarter 2007 net loss of 2 billion or $3.29 per diluted share.

Do you see that?

A. Yes.

Q. Is it your understanding that this press release corrected a prior misrepresentation, according to the plaintiff, relating to Freddie Mac's exposure to subprime loans?

Page 327

Steven P, Feinstein, Ph.D

MR. MARKOVITS: Objection. It's not within the scope of his opinions.

A. I understand that that's the allegation. And my understanding is that it corrected it in the sense that it removed the inflation that had previously been caused by misrepresentations and omissions.

BY MR. FRANK:

Q. Do you have an understanding of the meaning of the term "subprime loan"?

A. I have an understanding of it.

MR. MARKOVITS: Objection.

A. I also understand that it's a matter of some dispute in this case, and it's been suggested in this case that there's no consensus meaning to the term.

Although -- so it's always meant something to me.

BY MR. FRANK:

Q. What -- what has it always meant to you?

A. These are loans that are more credit -- that, for a variety of potential

Page 328

Steven P, Feinstein, Ph.D

reasons, riskier than conventional, conforming, traditional, higher-quality loans; higher credit quality loans.

Q. What does it mean for a loan to be a conventional loan?

A. That there's -- that there's adherence to conventional underwriting standards, of documentation and scoring on the variety of characteristics that are used to score the credit worthiness of a loan; that there's the documentation to support the scoring and the underwriting; and that there's conformity to the standards, without exceptions, without having to deviate in conforming exceptions, that there's conformity to the generally accepted standards for the loans is what's meant by the prime conventional conforming loans.

Subprime are loans that, for whatever reason, either fall below those standards or don't have the documentation to support that scoring.

Q. What are conforming loans?

Page 329

Steven P, Feinstein, Ph.D

MR. MARKOVITS: Objection.

Jason, I have indicated before that I would give you some leeway with regard to time and you spend your time as you see fit. But you're delving into areas now that are not part of his opinion with regard to market efficiency, nor are they part of his opinion with regard to the damages that can be calculated on a class-wide basis.

Again, you spend your time as you see fit, but you have a limited amount of time today, and these questions have nothing to do with the current opinions he's been asked to provide.

BY MR. FRANK:

Q. You can answer.

A. Let me answer and then we'll take a break.

The loans that conform to stated underwriting standards without a need for special exceptions and exceptions.

Can we take a break?

Q. You need to take a break?

Steven P, Feinstein, Ph.D

A. Yes.

MR. FRANK: Okay. Let's go off the record.

THE VIDEOGRAPHER: We're going off the record at 3:59.

(Recess taken from 3:59 p.m. to 4:29 p.m.)

THE VIDEOGRAPHER: Back on the record at 4:29.

BY MR. FRANK:

Q. Dr. Feinstein, have you proposed a damages model that will allow you to separate out damages caused by any of the alleged misstatements or omissions individually?

A. I believe so.

Q. And how does your damages model do that?

A. We talked about that before the break.

Once I understand what

Steven P, Feinstein, Ph.D

misrepresentations and omissions remain as are supported as actionable, I can calculate the impact of those particular misrepresentations and omissions on the stock price throughout the class period, compare that but-for price to the actual price to construct an inflation ribbon, and then damages for any individual investor would be the change in the inflation over the course of their holding period subject to the Dura cap.

Q. I think you were saying to me earlier before the break that the world is complicated.

A. Yes.

Q. And aren't there some misrepresentations -- alleged misrepresentations that are about similar subjects?

A. Yes.

Q. And how would you disaggregate the impact of those alleged misrepresentations about similar subjects?

A. With estimation about how the

Steven P, Feinstein, Ph.D

information impacted the stock price.

Q. And how would you go about making that estimation?

A. Again, it's an exercise in valuation.

How does changing information -- what analysts and investors do every day is they observe what information has changed about the subject security and based on the change in the information for the subject security, they arrive at a new equilibrium price, a new price that they believe -- or a new value that they believe the security is worth.

I would do the same thing. As pieces of information change, I would assess through estimation and valuation tools the impact of that information on the value of the company.

It's -- if it's positive news, it would have a positive impact. If it's negative news, it would have a negative impact.

Comparing -- to assessing how it

Steven P, Feinstein, Ph.D

might affect the probability of future cash flows or the probability for stated value of expected performance metrics, that would indicate what the change in value should be as a result of the changing information set.

Q. What are the specific estimation and valuation tools that you just referenced?

A. Discount cash flow, valuation multiples, and the literature on effects caused by reputation, liquidity, and also with some information from the event study.

There may be others, but that's what comes to mind now.

Q. In connection with your damages model --

A. Scenario analysis. Add that to the set of tools.

Q. Is it fair to say that you would use the loss that was realized on November 20, 2007 to estimate stock price inflation at the beginning of the class period?

A. I think there's information in the empirical drop. It somewhat informs what

Steven P, Feinstein, Ph.D

the inflation would be earlier. But I wouldn't simply use the drop at the end as -- unless I -- it's always possible depending on what I find when I delve into the analysis, but it's not likely that I would claim or contend or conclude based on the data and evidence that the inflation at the end was exactly the same as the inflation at the beginning. It likely changed over time.

Q. And how would you determine how it changed over time?

A. I would look at other companies. There's a number of tools. It's an evaluation exercise.

Just like other analysts and investors update their valuation of a company based on new information, I would look at the flow of information over the course of the class period and update the but-for valuation the same way.

Q. The same way as what?

A. As other analysts and investors.

Q. And --

Steven P, Feinstein, Ph.D

A. I would value the company given a different set of information, which is exactly what the other investors would have done had they been provided with information.

Investors and analysts constantly, continuously update their assessments of the value of many securities based on changing information.

I would do the exact same thing, if I were the damage expert, to calculate how the changing information set affects my estimate of the value of the company, Freddie Mac.

Q. Would your valuation be based in part on the damage -- on the event study you conducted with respect to November 20, 2007?

A. I wouldn't ignore that. I would certainly take it into account.

Q. Now, knowing Freddie Mac's true subprime exposure in 2007, to the extent that it's a true subprime exposure, is it possible that some investors would not have

Steven P, Feinstein, Ph.D

purchased shares in Freddie Mac?

A. I think it's certainly possible. It's not part of my damage model, except to the extent that had some investors shied away from it, the price probably would have been less for that reason alone. I mean, for that reason, which is...

Q. Is it --

A. In concert with other reasons.

Q. Is it possible that some investors before would have been willing to purchase shares but only at a lower price?

A. It's certainly possible, but that's not the basis of the proposed damage model.

Q. Is it --

A. The basis of the proposed damage model is the inflation. Without speculating as to who would have bought and who wouldn't have bought, we can conclude that the price that people paid was inflated, was too high, if, in fact, that's what the data show.

Q. So your damages model doesn't distinguish between investors that would

Steven P, Feinstein, Ph.D

not have purchased shares and investors that would have purchased shares but at a lower price?

A. It's not a model. It's not a transaction causation model. It's a model that doesn't seek to speculate as to who wouldn't have bought.

It's a model that calculates, for everyone who did buy, how much they overpaid and how much they lost as a result of over paying.

Q. Would you agree that US housing prices declined significantly during the proposed class period?

A. Yes. That's my understanding of the data.

Q. Are you aware of any other times where the US housing prices have declined to this degree?

A. No.

Q. Fair to say the US housing market decline during this period was unprecedented?

A. You know, there are -- I don't like

Steven P, Feinstein, Ph.D

to make blanket statements like that. I know that certain regions during certain periods had similar declines.

It's -- so I don't want to say it's unprecedented. I know that Texas in the 1980s was a difficult housing market.

But nationwide, people consider this period extraordinary in the history of real estate prices. And it's been -- as a result, it's -- there's quite a literature that I could rely on, too, about the impact of the housing market decline on valuations.

Q. What typically happens to mortgage loan portfolios when real estate prices decline?

A. You mean in terms of are they worth more or less?

Q. Yes.

A. Well, they're worth less, generally, typically. But the amount that they're worth less depends on the quality of -- the credit quality of those loans.

I mean, the whole purpose of

Steven P, Feinstein, Ph.D

underwriting is to provide safety features to insulate the mortgage loan portfolios from declining real estate values.

Q. Would you agree that mortgage defaults increased significantly during the proposed class period generally?

A. If you look across all classes, yes.

Q. All classes -- what classes are you referring to?

A. Prime versus subprime, prime sub, Alt-A, subprime.

Q. All different kinds of loans experienced significantly greater mortgage defaults during the proposed class period, to your knowledge?

A. Well, some more than others. The whole idea of underwriting and scoring loans is to categorize the loans according to credit quality. And the higher credit quality loans don't default as much as the lower credit quality loans. There's data and statistics on that. There's studies -- there are intensive studies out there on that.

Steven P, Feinstein, Ph.D

Q. Well, putting aside the difference in performance between classes, it's your understanding that all classes of loans had significantly increased mortgage defaults during the proposed class period, correct?

A. It's my understanding, yes.

Q. And those defaults, they increased over the course of the class period, right?

A. Right.

Q. Would you agree that rising mortgage defaults was a significant contributing factor to the liquidity crisis in August of 2007?

A. It was a factor. You mean, systemically?

Q. Yes.

A. Nationwide. Yes.

Q. In your view, did market participants anticipate the degree of losses in the mortgage market during this period of time?

A. Some did.

Q. Some did.

A. There are famous examples, and many

Steven P, Feinstein, Ph.D

didn't.

Q. Did market regulators?

A. I would have to review that. I'd rather not speak for them.

Q. If the court were to conclude that a particular corrective disclosure day -- for example, November 20, 2007 -- contained confounding news, how would an event study analysis disentangle the effects of multiple pieces of news released at the same time?

A. Well, the event study analysis doesn't do that. The evaluation analysis would be applied to do that.

Q. And how does the evaluation analysis do that?

A. Well, the event study tells you the aggregate effect of all of the news. To see what the major contributing factors were, one has to see what the negative news, which news was expected, which news was unexpected; and of the news that was unexpected, what typically, you know, how does it fit into a valuation model? Once

we know how it fits into a valuation model, we can weigh and value each piece of news and, therefore, disaggregate the pieces.
It's not easy, but it can be done.
Q. In order to do it, would it require your personal judgment and estimate?
A. Valuation requires judgment and some level of subjectivity, because ultimately, when you get to the heart of it, valuation is an estimation of what one fully informed market participant would pay another fully informed market participant for security. You're estimating what two human beings would do.
So there's definitely a human and subjective element in valuation. I have to anticipate what other market participants would have done.
Q. Now let me turn your attention back to your report. I believe it's marked as Exhibit 96.
A. What page?
Q. Page 42, Paragraph 152, Roman II.
A. Okay.

Q. Do you see where you wrote, "Second, an inflation ribbon would be constructed for the stock using generally accepted empirical analysis and valuation tools"?
A. Yes.
Q. How do you propose to construct the inflation ribbon for each day of the class period?
A. Again, it depends on what I find in the information, but I have at my disposal the entire array of valuation tools. Valuation tools are designed for specifically that purpose, determining what a security is worth under a particular information set. That's what the field of valuation is about.
I would apply the principles and tools from the field valuation to that task.
Until I actually execute the valuation, I couldn't tell you exactly which tool I would use for each component, but I would have at my disposal all the tools available, all the tools that the

field provides.
Q. As you sit here today, you just have not chosen which tools you would use?
A. Well, I anticipate that I would make use of the event study, and, I would make use of the models that are in the analysts' reports. And my recollection is they use the standard tools, which are discounted cash flow and valuation multiples.
I also know from other cases that I would probably use published research that studies the impact of changing reputation effects and liquidity effects.
Q. Are you familiar with the difference between a constant dollar inflation band and a constant percentage inflation band?
A. Yes.
Q. And which would you propose to use?
A. I'm not sure yet. But I would make that decision when analyzing the facts and circumstances and executing the damage calculation.
One of those will be more appropriate than the other, but I haven't

determined at this point which one is.
Q. What are the factors that would determine which approach would be more appropriate than the other?
A. Generally, the percentage inflation ribbon is compelled by an observation that the misrepresentations and omissions were about the viability and forward-looking profitability of the entire company.
Whereas, a dollar inflation ribbon is compelled by facts and circumstances that indicate that the alleged misrepresentations and omissions are about the valuation of a particular asset that's owned by the company.
In this case, it's not clear yet which -- I have to do more investigation to choose one, because there seems to be elements of both, and I would have to pick one or the other.
Generally, the dollar ribbon is the more conservative ribbon that gives the lower damages. And sometimes when it's unclear which is the better way, I pick the

Steven P, Feinstein, Ph.D

more conservative. So that's another consideration I would incorporate, which if it's a difficult choice and/or a choice that's difficult, maybe it's the right choice but difficult to explain and articulate and defend, I might choose the more conservative. I haven't decided yet.

Q. Is a constant inflation band approach the approach that you typically use in securities cases?

A. More often than the percentage. Constant dollar is used more often than the constant percentage.

Q. Is there any case in which you have used another method, another securities case?

A. Besides percentage and dollar?

Q. Yes.

A. Well, when I use percentage, I also have a -- another column in the damage calculation exhibit that keeps track of inflation dissipation that's not recoverable because of the Dura cap.

Steven P, Feinstein, Ph.D

So any time you use percentage, you're necessarily using a combination of percentage and a Dura cap analysis.

Q. Well, I'm not sure that I understand the answer to my question.

Is there any case in which you have used another method besides the constant inflation band approach?

A. Well, I think by constant inflation, you mean constant dollar. Or we really shouldn't even call it constant dollar, because we don't hold the dollars constant. We measure the inflation through time in dollar terms rather than percentage terms.

But I have used -- and the alternative to that is the percentage inflation ribbon.

I've used both. I use dollar more than percentage. But I use -- I've used both.

But what I was trying to explain is that when you use -- that I don't -- even nowadays, because of the Dura case decision, it's not every -- every inflation

Steven P, Feinstein, Ph.D

ribbon is somewhat of a hybrid that also takes into account dissipated inflation that's not recoverable.

So it's not even just dollar inflation or percent inflation, it's dollar and/or percent inflation minus unrecoverable Dura cap inflation.

Q. Have you ever encountered any set of allegations or facts that would make a constant inflation band method inapplicable?

A. Yes, of course. Constant dollar.

Q. Let's take it in pieces.

Let's first let's do constant dollar, since that's what you gravitate toward.

Have you ever encountered an instance or a set of allegations or facts that would make a constant dollar method inapplicable?

A. Well, I've encountered facts in cases where the percentage ribbon is the better ribbon. I mean, it wasn't that the other one would be impossible to calculate.

Steven P, Feinstein, Ph.D

But it's more consistent. It's the appropriate choice of methodology, given the facts of the case.

Q. Now let's take both -- now in that case, you're saying that you didn't use constant dollar, you used constant percentage; is that right?

A. I don't want to use the word "constant," but I used a percentage, a percentage inflation ribbon.

Q. Now, have you ever encountered a set of facts or allegations that would make a constant dollar or a percentage ribbon method inapplicable?

A. By "inapplicable," you mean inappropriate?

Q. Inappropriate.

A. Or impossible?

Q. Well, we'll take them in turn.

Let's start first with impossible.

A. No.

Q. No?

A. No.

Q. What about inappropriate?

Steven P, Feinstein, Ph.D

A. Yes.

Q. Okay. And in that case or those cases, how would or did you calculate damages on a class-wide basis?

A. I would have to look at those reports to see the analysis that I did. It's much more intricate than a market efficiency analysis.

I take -- essentially, it's a repeated, an iterative valuation exercise to revalue the stock, taking in account changing information over the course of the class period, and then comparing that but-for price to the actual price that prevailed in the marketplace on each day in the class period.

Q. And do you expect that you might use that method in this case?

A. It's possible.

Q. What are the facts that would give rise to you using such an approach?

A. If the -- okay. If the facts were changing frequently -- facts that are deemed to be material, that either I deem

Steven P, Feinstein, Ph.D

to be material based on valuation principles or an assessment of what analysts and other investors are saying about the stock -- I mean, if they're deemed -- if material facts keep changing -- keep changing the value of the company and if in the but-for world the set of facts keeps changing, it would be necessary to update the but-for price frequently.

Q. So it may be that you use a dollar inflation band approach or a percentage inflation band approach or some other approach to this case; is that fair?

A. No. It's -- it's generally one or the other.

The question that I was answering is would it require continuous updating of the but-for price, and it may or may not, depending on how frequently the set of relevant information changed.

I mean, analysts -- if you look at analysts' reports, they generally don't change their targets every day. They

Steven P, Feinstein, Ph.D

change their targets when new, material information comes out that changes their assessment of the company.

So you can use the analysts -- how frequently analysts update their price targets as a standard for how frequently I might have to update the but-for price.

But if it's the case that the information set is changing so rapidly in the but-for world, then I would update the but-for price more frequently using valuation tools.

Q. And here further down in --

A. I just want to say, not that I would, but I may if I deem it to be appropriate.

Q. So in your report, in Paragraph 152, Subsection 2, you write that "The inflation ribbon is often constructed by working chronologically backwards from the final corrected disclosure to the state of the class period."

A. Start.

Q. "...to the start of the class

Steven P, Feinstein, Ph.D

period, accounting for alleged fraud-related residual price declines as they occur."

Do you see that? It's on Page 43.

A. Right. So that's appropriate for a case where the value of the information at the beginning of the class period is similar to the value of the omitted or misrepresented information at the end of the class period, and there's not a lot of intervening changing and confounding, non-fraud-related information, then that approach is called for.

Q. Now, you have identified at least one structural break in this market during the class period, correct?

A. No, that's a structural break referring to the volatility and the regression parameters.

It's not necessarily a structural break with respect to the value of the omitted information.

Q. Is it --

A. I would have to check to see if it

does apply.
Q. So is it possible that the value of the omitted information may change over these two different estimation periods that you identified in your regression model?
A. It is possible.
Q. And how would you calculate that?
A. I would see what other analysts are saying about the value of information before and after that period.
I would see how they changed their valuations as a result of the changing regime for this company and, perhaps, other companies.
Q. Now, specifically with respect to what you wrote about constructing an inflation ribbon by working chronologically backwards --
A. Right.
Q. -- how, specifically, do you propose to apply that approach to this case?
A. I haven't decided yet. This is a tool that I could use if it's deemed appropriate.

But I -- I can tell you this much, I would certainly somehow make use of the information that is provided to the analysts as a result of the corrective disclosure. But I would also use valuation tools to see if there needs to be adjustments as we move backwards in time through the class period.
Q. And do you see where you use the expression "final corrective disclosure"?
A. Yes.
Q. In this case, do you know what the final corrective disclosure was, according to plaintiffs?
A. According to plaintiffs, what they're alleging is that it's November 20th, as of now.
Q. Have you ever determined that you could not measure inflation based on the price declines caused by corrective disclosures?
A. Well, if you're saying that I had to -- have I ever determined that that information had to be disregarded? No.

It's always -- it's valuable information to consider in one way or another.
Q. Well, putting aside whether it had to be disregarded, have you ever determined that you couldn't measure inflation based on price declines caused by corrective disclosures?
A. If you mean have I ever determined -- I need to know more precisely what you mean.
Are you asking has it ever been the case where I observed a price decline, had a corrective disclosure, and then concluded that the inflation prior to that corrective disclosure was some amount different from the drop? Is that the question?
Q. That isn't, but I'm curious as to your answer to that question, too.
A. That question -- the answer to that question is yes.
Q. Well, what about -- is it correct to say that the approach you plan to take is to measure inflation based, at least in

part, on the price decline you observe in connection with corrective disclosures?
A. Of course. I would take that information into account.
Q. Now, when you say you would take it into account, will you be taking it into account in terms of an arithmetic calculation? Or will you be taking it into account in the sense that it will inform your judgment and estimate?
A. Both. I mean, I don't expect that I would just simply -- it's possible that I would, but at this point I don't expect that I would simply accept that drop number as being the only relevant factor in the damage calculation, and that -- or that the inflation would necessarily, throughout the class period, be exactly equal to that final drop.
I don't expect that to be the case. It may be. But at this point, I don't expect it to be.
But what we can observe when the information became available to the

Steven P, Feinstein, Ph.D

marketplace, it is important information for conducting the valuation analysis. I would make use of it.

Q. What other factors would you consider?

A. The changing value of information over the course of the class period for -- among others.

Q. What are the others you reference?

A. Confounding information, both at the time of the disclosure and earlier, and what's ultimately either adjudicated or what I'm instructed to assume about the allegations as to which allegations and information are actionable.

Q. Anything else?

A. Possibly. As I sit here now, I mean, those are the main things: changing value of information, confounding information, and some determination as to what allegations are deemed actionable, that just from a legal perspective.

I mean, I can calculate the economics of any piece of information, but

Steven P, Feinstein, Ph.D

which ones relate to legally recoverable, recompensable losses is a separate matter. So I would need instruction from lawyers or the court to that effect.

Q. Let me turn your attention to Paragraph 157 of your report, on Page 45 of Exhibit 96.

Do you see where you say that "A fundamental principle of financial economics is that in an efficient market, investors are not systematically wrong"?

A. Yes.

Q. Does that statement mean that investors are not wrong on average?

A. Yes, in an efficient market.

Q. In an efficient market investors are wrong -- are strike that.

In an efficient market, can investors be wrong some of the time?

A. Yes.

Q. If investors are wrong some of the time, how will you account for this in your damages model?

A. Well, I would apply the best damage

Steven P, Feinstein, Ph.D

model available, which is, generally, based on the assumption that the market's -- well, the reason why the best valuation models are called the best valuation models is that they're models that represent typical -- what investors typically use to value stock.

So I would use the models that, according to the literature, that models considered to best represent how investors value stocks, which would be that they aren't wrong, unless there's some evidence to the contrary.

Q. Is it fair to say that not all investors have the same risk tolerance?

A. Oh, that's fair.

Q. Is there any way to test for this?

A. There is. It would be irrelevant to this case. But there's a way to test. The literature has tests for risk tolerance.

Q. Your proposed model doesn't account for differing risk tolerance among investors; fair to say?

A. It doesn't need to because of the

Steven P, Feinstein, Ph.D

nature of the model and the nature of the model that's typically used in a 10b-5 case, which could be applied here.

Q. Well, putting aside whether it needs to or not, it doesn't account for differing risk tolerances among investors, right?

A. Right. It's a model that could be applied commonly to all investors in the class.

Q. Do you agree that there are risks presented by loans to borrowers with lower FICO scores?

A. Yes.

Q. Do you agree that the risks presented by loans -- strike that.

(Exhibit No. 109 marked for identification.)

BY MR. FRANK:

Q. I'm going to show you an exhibit that has been marked as 109.

What is Exhibit 109?

A. This is one of those NERA

Page 362

Steven P, Feinstein, Ph.D

manuscripts written by David Tabak.

Q. And you've cited this manuscript by Dr. Tabak in your work, correct?

A. Did I cite it in this one? In this case?

Q. Well, if you would like, let me turn your attention to Exhibit 95, which is your declaration.

A. Okay.

Yes, it's there on Page 6. Okay.

Q. And so you cited this manuscript in this case in your declaration, right?

A. Yes.

Q. And you've cited it in your work in other cases, right?

A. Yes.

Q. Please turn to Page 2 of the manuscript.

A. Okay.

Q. And this is Dr. Tabak, who is also the same Dr. Tabak who co-authored the FDT article, right?

A. Right.

Q. He's an authority on the FDT z-test,

Page 363

Steven P, Feinstein, Ph.D

correct?

A. Well, we've talked about that before. He gets credit for being a co-author of the first paper on it.

I think the word "authority" might have some legal connotation that I'm reluctant to agree to at this point.

Q. Nevertheless, you have cited him in connection with your work on event studies and z-tests, correct?

A. Right. And I've met him, and I've talked to him. I agree with a lot of things he says and disagree with a lot of other things he says.

The things I agree with, I've -- where we reach common agreement, I point that out as being valuable information.

Q. Do you see his -- the section of the manuscript entitled "The Proof-by-Example Approach"

A. Yes.

Q. And do you see he says, "Following Cammer, there has been an evolving history of how experts and lawyers presented

Page 364

Steven P, Feinstein, Ph.D

empirical facts that might have been deemed to show a cause-and-effect relationship between news and stock price movements."

Do you see that?

A. Yes.

Q. And he further writes "An initially popular approach might be termed proof by example. In this method, an expert or counsel for plaintiffs would present a handful of days with news followed by a stock price movement."

Do you see that?

A. Yes.

Q. Did I read that correctly?

A. Yes. I don't think you understand it correctly, but I think you see it correctly.

Q. Have I shared with you my understanding of it?

A. I am anticipating where you're going with it, but let's see.

Q. Now, do you agree that an initially popular approach might be termed proof by example?

Page 365

Steven P, Feinstein, Ph.D

A. I know that some people have done backward event studies, which is what this is about, and I've never done a backward event study.

And I know that the expert in PolyMedica, that he criticizes here or points out that the court criticized, used a backward event study, and it's the backward event study that is what he means by proof by example.

Q. What is a backward event study?

A. Backward event study is where you first look at the data -- you first look at the regression results to identify which dates are statistically significant in the -- in a time series of residual returns. And then on the basis of certain days being statistically significant, pick those days to bring to the court's attention and say that these are -- these days were statistically significant, and then look for some news on those days that reasonably could have been correlated with the stock price to say that this is a --

Steven P, Feinstein, Ph.D

that the significant drop or rise in the stock price was a result of the identified news that was identified only after one observed the statistically significant stock price movement.

And it's an improper analytical approach because we know that 5 percent, roughly, of all residual stock returns will be statistically significant, spuriously so, just because of the nature of statistical significance and what it really means by design.

And so you cannot conclude from this methodology -- from that backward methodology that information caused the stock price to move.

That's what was done in PolyMedica. That's what the court rebutted in PolyMedica. Not just that it was only five days, but that the five days were picked on the basis of them being statistically significant, not on the basis of there having been important news that transpired on those days.

Steven P, Feinstein, Ph.D

Q. You believe that Dr. Tabak is identifying here a problem with first identifying statistically significant days and only second identifying news associated with those days?

A. Yes.

Q. Is that right?

A. Yes, and because he cites the PolyMedica case, and that's what the problem was with the expert in the PolyMedica case.

Q. You believe that the better way to conduct an event study is to not know what days are statistically significant but, rather, identify days based solely on an assessment of news; is that correct?

A. Well, that would be a better way to do it. But if you already do know what the statistically significant result is, you better have a very compelling -- you better have very compelling facts to support the selection of that date on the basis of news alone, not on the basis of it being statistically significant, which is what I

Steven P, Feinstein, Ph.D

did in this case.

I mean, I would not have picked that day -- I did not pick November 20th as the subject of the event study because it was a statistically significant day. I picked it because it was indisputably a red-letter important information date in the life of this company.

Q. Well, in addition, as you testified earlier, you were unable to find a single other day among all the other 329 days that you thought were appropriate for testing; is that right?

A. That were ideal candidates, right. That's the case.

So that's also why it was restricted to a single event, but also why the collective event test was motivated.

Q. Now, Dr. Tabak here does not mention anything about selecting dates on the basis of previously knowing their statistically significant results, does he?

A. That's what he -- I mean, he's referring to the PolyMedica case. That's

Steven P, Feinstein, Ph.D

where it's elaborated upon, this methodology that is rebutted, refuted.

He's talking about simply pointing out a handful of examples where it appears that there were stock price movements that were large.

Well, that methodology is legitimate if the proper event study methodology is followed, but it's not legitimate if the backward event study is followed.

Q. Do you see where he writes, "A serious and, in fact, fatal problem with the approach is that one would expect to see such results if stock price movements were completely random and had no average correlation with news events"?

Do you see that?

A. That's only a true statement in a backward event study. It's not a true statement if the event study is run appropriately.

Q. Why is it not true if the event study is run appropriately?

A. Because if the event study is run

Steven P, Feinstein, Ph.D

appropriately and you first identify the dates to test because of the news and then observe that the stock price did move, the inescapable conclusion is that you've established, you've demonstrated that the price reacts to news.

If, on the other hand, you pick the dates because the stock price moved and then look for some news, after the fact, that may or may not be relevant, then you have that serious problem, because that's what could happen.

And under that approach, one would expect to see such results if stock price movements were completely random and had no average correlation with news events.

You will not see significant event study results when stock price movements are completely random and have no average correlation with news events if the event study is run appropriately in the forward direction rather than the reverse direction.

So he must be referring to

Steven P, Feinstein, Ph.D

reverse -- backward event studies.

Q. Have you ever talked to Dr. Tabak about this issue?

A. I think in the course of -- in the context of litigation, where we both served as experts, we've communicated, you know, via our reports.

But no, I haven't had a discussion with him about that.

Q. Your interpretation of this section is that it's solely an attack on -- what was the expression that you used?

A. Backward event studies.

Q. -- backward event studies; is that correct?

A. Right. Because it's not the case with forward, correctly run event studies that you will see examples of statistically significant results, statistically significant price movements on information -- on big information dates when stock price movements are completely random and have no average correlation with news events. That's just not the case.

Steven P, Feinstein, Ph.D

It's only the case, as I said before, with reverse event studies, backwards event studies.

Q. And accordingly, you think that it is appropriate, so long as an event study is constructed correctly, to prove market efficiency by using only a few, or in this case, one example; is that correct?

A. Well, we talked about this earlier. No, that's not what I testified to.

What I said was that these empirical results, in concert with the Cammer and Unger test results, proves to a high degree of statistical and professional certainty market efficiency.

Proof, but to a lesser degree, is offered only by the test, but it is to a lesser degree. And that's -- and I'm not -- that's not my opinion in this case. I'm not drawing my conclusion on the basis of that test alone. I'm offering my opinion on the basis of that test in concert with the other evidence, the Cammer and Unger results.

Steven P, Feinstein, Ph.D

Q. Now, just to be clear, if you were to discover that your z-test was flawed and that it did not result in statistically significant results, would you change your opinion in this case that Freddie Mac's common stock traded in an efficient market?

A. I would have to see why it was thought to be flawed. I would have to know that first. I would have to see what I potentially got wrong.

Q. Well --

A. I would certainly consider it. It could change my opinion.

I mean, I'm a scientist. I'm going to take into account information and evidence and data.

I won't disregard it, but I also will weight that evidence and data appropriately. I want to know why it's thought to be flawed.

If it's thought to be flawed because it doesn't conform to one textbooks's menu of conditions when, in fact, the literature says that it doesn't have to conform to one

Steven P, Feinstein, Ph.D

textbook's menu of conditions if other diagnostics are satisfied, I would give it less weight, you know, the conflicting evidence less weight.

If, on the other hand, I'm convinced that I didn't do it correctly and that the results indicate something opposite, I would take that into account and revise my opinion appropriately.

But at this point, I don't see that it's likely.

Q. Well, assume for the sake of this question that you conclude that the test was flawed. You conclude -- you've become convinced the z-test just isn't supposed to be run on a sample size that small regardless of what diagnostic tests are done thereafter.

If you yourself reach that conclusion and, therefore, the z-test, you weren't relying upon it anymore, do you believe that you would maintain your opinion solely based on your analysis of the Cammer and Krogman factors one through

Steven P, Feinstein, Ph.D

four and six through eight and solely based on your single-event event study that Freddie Mac's common stock traded in an efficient market?

A. I would rather wait and see what the compelling evidence is.

I can tell you that during a break, I examined the binomial probability of having three out of eight significant events when, in fact, the dynamics -- under the null hypothesis of news events and non-news events having the same dynamics, and it only came out to 0.5 percent, and that's a test that's not subject to the same constraints or potential criticisms as the z-test.

I mean, it's, essentially, as we talked about, before diagnostic.

0.5 percent is far below the 5 percent cutoff for reasonably rejecting the null hypothesis.

So that just gives me more confidence that I did it right and the diagnostic supports my use of the z-test,

Steven P, Feinstein, Ph.D

but I will --

Q. Perhaps you don't understand my hypothetical --

A. -- but if I'm confronted with compelling evidence that my analysis is wrong, I very well may change my opinion.

Q. Well, I'm just trying to understand what, from your perspective, is sufficient evidence to establish market efficiency.

So I think you're struggling with the underlying arguments here and maybe if we do it chronologically, it would be easier.

You examined the Cammer factors one through four, correct?

A. Right.

Q. And you did the Krogman factors six through eight, correct?

A. Right.

Q. And the first thing you did in terms of factor five was you did your single-event event study, correct?

A. Yes.

Q. Now, chronologically, that is how

Steven P, Feinstein, Ph.D

you proceeded; is that right?

A. That's right.

Q. And that was before you even did the z-test, right?

A. That's right. That's right.

Q. Before you did the z-test, were you comfortable concluding that you had sufficient economic evidence to opine that Freddie Mac's common stock traded in an efficient market?

A. To a lesser degree of confidence and for a more limited period of time. I mean, if you're looking at that point in isolation without any other test being considered.

That's what we talked about earlier when we looked at the paragraph where I said that that result offered proof.

Q. And what was the period of time that you felt comfortable opining upon at that time?

A. Well, if you look at that paragraph, it doesn't have a time frame. It doesn't say, throughout the entire class period.

Steven P, Feinstein, Ph.D

It says that it's proof of market efficiency, which it is, for that day and reasonably for some period of time around that day.

In concert with the other factors and the other tests, I can extrapolate and deduce that the market for Freddie Mac stock was efficient throughout the class period.

But based on that one test, my opinion stands as how I expressed it.

Q. Now, this is going to be hard for you because now we're going to deal with a hypothetical that isn't the real world.
A. Okay.
Q. Assume that you hadn't done the single-event event study.
A. Okay.
Q. *All you've got is the Cammer, Krogman factors, and on factor five, all you've got is the z-test but not your single-event event study.
A. *Okay.
Q. *In your view, would that have been

Steven P, Feinstein, Ph.D

enough for you to opine that Freddie Mac's common stock traded in an efficient market?
A. *You're right. I just don't see the point of pondering the hypothetical. That's not happened. It's not what's relevant to my opinion. Maybe it's relevant to your cross-examination and potential criticism of my opinion.

But from my perspective, I didn't have to ponder that hypothetical because I had this abundance of evidence that all pointed in the direction of market efficiency.

MR. FRANK: Let's take a brief break here, and then we'll wrap up.

MR. MARKOVITS: Great.

THE VIDEOGRAPHER: We are going off the record at 5:19.

(Recess taken from 5:19 p.m. to 5:33 p.m.)

THE VIDEOGRAPHER: We are back

Steven P, Feinstein, Ph.D

on the record at 5:33.

MR. MARKOVITS: Can I have the last two questions and answers.

*(Record read.)

THE WITNESS: Could I add to my answer?

BY MR. FRANK:
Q. Yes, you can add to your answer.
A. Well, I had some time to ponder the hypothetical.

And this Cammer-Krogman factor, especially the degree of the strength by which Freddie Mac satisfied those, is sufficient, based on my understanding of Halliburton II and what the court explained -- or the Supreme Court explained was necessary to prove market efficiency in a securities case, that those alone is sufficient to satisfy the court that Freddie Mac stock traded in an efficient market over the course of the class period.

Steven P, Feinstein, Ph.D

So given that, the empirical tests in this case are icing on the cake. They're a demonstration of the market efficiency that's already sufficiently proved by the Cammer and Krogman factors.

So if someone came to me and said that one or both or either or both of my empirical tests were in some way flawed, I would want to know why they thought they were flawed. I would want to know whether they thought they were flawed because they don't provide a demonstration of market efficiency, which wouldn't change my opinion.

But if they said that they actually provide a demonstration of inefficiency, then I would consider it and see if they were right about that, and it could conceivably change my opinion.

Q. Is it your opinion that had you not run the empirical tests that you ran, namely, the single-event event study and the FDT z-test, that you, nevertheless, had sufficient economic evidence to conclude

Page 382

Steven P, Feinstein, Ph.D

that Freddie Mac's common stock traded in an efficient market?

A. With the standard of confidence or standard of proof of it being more likely than not, yes, it was far more likely than not based on those Cammer and Krogman factors; it is far more likely than not based only on the Cammer and Krogman factors, excluding the empirical factor, that Freddie Mac stock trades in an efficient market, because generally, inefficient stocks are a rare exception, inefficient markets are a rare exception. They become even more rare when you're looking at large companies, even more rare when you're looking at large companies that are actively traded, even more rare when it's large companies that are actively traded with abundant analyst coverage, and even more rare if you add in the factor, you know, the narrow bid-ask spread -- that it has a narrow bid-ask spread, and even rarer than that if you take into account that it's listed on the New York Stock

Page 383

Steven P, Feinstein, Ph.D

Exchange.

So it -- I wouldn't say it's 100 percent iron-clad proof without a demonstration, but it certainly satisfies the standard of being far more likely than not on the basis of all the Cammer and Krogman factors, exclusive of the empirical factor.

Q. Are you aware of any academic literature that supports your view that a market is more likely than not efficient based solely on the structural Cammer and Krogman factors, excluding the fifth empirical factor?

A. Yes.

Q. What academic literature is that?

A. It's the Barbara Griffen article. They look at -- they find it on the basis of analysts' coverage and volume. They conclude that those factors distinguish efficient from inefficient stocks.

Q. And have you ever authored an expert report in a securities case where you opine that the -- that a company's security

Page 384

Steven P, Feinstein, Ph.D

traded on an efficient market based solely on the structural Cammer-Krogman factors and not additional empirical testing?

A. No. Because -- frankly, it's because the standard of proof that I need, I think, exceeds the standard of proof and the quantity of evidence that courts have explained they need. So, my work tends to be overkill.

Q. What is the standard of proof that you need in order to formulate the opinion that a security trades in an efficient market?

A. You said it yourself. I haven't, and I wouldn't, author a report concluding that the stock was efficient if I didn't have some demonstration -- some empirical demonstration of the efficiency.

But in the hypothetical, my understanding is that the evidence without the empirical is sufficient, given what the courts have explained they need.

Q. Well, I believe my -- I've offered several hypotheticals and some time has

Page 385

Steven P, Feinstein, Ph.D

passed, so let me just formulate this new one.

You come to conclude that the two empirical tests you ran aren't reliable. For one reason or another, you cannot rely upon your single-event event study or your FDT z-test.

Given that set of circumstances, but all of the other factors staying the same, would you personally be willing to offer an opinion that Freddie Mac's common stock traded in an efficient market?

A. I would need to know why -- I would need to know what that compelling evidence was that the tests were flawed.

And I would need to know whether the correction of the test simply removed those tests as demonstrations of efficiency or became demonstrations of inefficiency.

If it were the latter and there were demonstrations of inefficiency, I can tell you, I would certainly consider it and I would certainly consider revising my opinion.

Steven P, Feinstein, Ph.D

If it's simply that there's a quibble about the way I ran the test, again, I have to think about that, but it's -- the other evidence is so strong that it very well might not change my opinion, and I would still -- my understanding of the -- of what Halliburton II, what the courts have said, that the other evidence would be sufficient for the court for purposes of determining and establishing market efficiency.

Q. If you were to reach your own conclusion that your event study test and your z-test resulted in statistically insignificant results, would you view that as evidence supporting a conclusion of inefficiency?

A. I would -- it would erode, to some extent, my confidence in the conclusion. But not so far below the standard of more likely than not that the market was still efficient.

And that's -- again, I'm -- it was a hypothetical question. I just want to

Steven P, Feinstein, Ph.D

caveat my answer that it's -- I suspect that would be my reaction. And confronted with a different reality, it might be a different reaction.

Q. Well, let's put aside for a second prior hypotheticals and just talk about the z-test.

If Miguel were to say to you, I made a calculation error. When I correct for my error, the results of the z-test are statistically insignificant.

In your view, would that result be evidence of market inefficiency, regardless of whether it establishes it or not, does it --

A. No.

Q. -- does it weigh against a finding of efficiency because it's evidence of market inefficiency?

MR. MARKOVITS: Objection. It's a compound question; two different questions.

A. Well, we would still know indisputably that four of nine of those

Steven P, Feinstein, Ph.D

events were statistically significant, and you can observe that four of nine is a much higher incidence rate than 5 percent or 6 percent, which seems to be the incidence rate for all other days.

The question is, would a z-test indicate that difference in incidence rates as being statistically significant?

So, I mean, it wouldn't -- it would, to some extent, diminish my confidence in the result.

But addressing a hypothetical with a degree of uncertainty, given how strong the other Cammer factors are for Freddie Mac, I don't think it would necessarily -- it wouldn't necessarily change my opinion about whether it was more likely than not to be trading in an efficient market.

BY MR. FRANK:

Q. Well, put aside the z-test strand here and let's talk about a z-test in a hypothetical test.

You run a z-test. It results in a statistically insignificant number.

Steven P, Feinstein, Ph.D

Is that evidence of market inefficiency?

A. It depends. It's case specific. It depends on -- at that point, you would look at the events and see, do the events compel that there should have been more significance.

So it would depend. It very well could, depending on the case and the facts.

If these were -- if there's no good explanation for why the sock failed the z-test, it could be evidence of inefficiency. It could be.

THE WITNESS: So at this time, gentleman --

MR. GOLDFARB: Can we take a break before you go off the record?

MR. FRANK: Okay. Let's take one more break.

THE VIDEOGRAPHER: We are off the record at 5:45.

(Recess taken from 5:45 p.m. to 5:58 p.m.)

Page 390

Steven P, Feinstein, Ph.D

THE VIDEOGRAPHER: We are back on the record at 5:58 p.m.

MR. FRANK: Unless you gentlemen have your own questions you'd like to ask, at this time I would like to suspend the deposition.

For the first time today, we learned that Dr. Feinstein ran tests that were not mentioned in his report and for which we were not provided any calculations or other relevant documents, including work papers.

We ask that you produce to us any documents that constitute such calculations or work papers or other relevant documents, including any metadata that would show when these tests were conducted. And upon receiving them, we will consider whether or not we can close the deposition or whether we will need to resume at another time.

We understand that you may or may not agree with the position we're taking, and you should, of course, feel free to put

Page 391

Steven P, Feinstein, Ph.D

your position on the record, but we -- I reiterate my request for those materials. Leading up to the deposition, we asked you for all materials underlying and supporting his report and opinions, and we just never did receive any materials relating to some of the matters that we heard, to which Dr. Feinstein testified today.

MR. MARKOVITS: And our position on the record is that this deposition is concluded, that those tests that were described were ministerial diagnostics, that you shouldn't keep the deposition open for them.

However, as we discussed and we agreed, we will look for the documentation of those tests and see if it's already been provided.

If not, and if it exists, it will be provided. We'll attempt to do so by tomorrow, and then we can both decide from there what the appropriate course of action is.

MR. FRANK: Fair enough.

Page 392

Steven P, Feinstein, Ph.D

I'll just add, given what you just said, that if these are just truly ministerial tests, we do not want to spend unnecessary time on matters that are not going to be the subject of testimony and matters that will never be submitted to a court. And if it is plaintiff's position that these tests are not going to be cited in any way to support the doctor's opinion and are never going to be submitted to the court, then please let us know that, because we do not want to spend time on matters that don't merit it.

But to the extent that your intentions are otherwise, the doctor's intentions are otherwise, we'll, obviously, need to know that, and then we, too, will act accordingly.

MR. MARKOVITS: Fair enough.

MR. FRANK: Okay. Thank you all.

MR. MARKOVITS: Thank you.

THE VIDEOGRAPHER: We are off the record. The time is 6:02.

Page 393

Steven P, Feinstein, Ph.D

(Deposition suspended at 6:02 p.m.)

Steven P, Feinstein, Ph.D

CERTIFICATION

I, DARLENE M. COPPOLA, a Notary Public, do hereby certify that STEVEN P. FEINSTEIN, PH.D., after having satisfactorily identifying himself, came before me on the 10th day of August, 2017, in Boston, Massachusetts, and was by me duly sworn to testify to the truth and nothing but the truth as to his knowledge touching and concerning the matters in controversy in this cause; that he was thereupon examined upon his oath and said examination reduced to writing by me; and that the statement is a true record of the testimony given by the witness, to the best of my knowledge and ability.

I further certify that I am not a relative or employee of counsel/attorney for any of the parties, nor a relative or employee of such parties, nor am I financially interested in the outcome of the action.

WITNESS MY HAND THIS 14th day of August, 2017.

____

DARLENE M. COPPOLA   My commission expires:
NOTARY PUBLIC   November 11, 2022
REGISTERED MERIT REPORTER
CERTIFIED REALTIME REPORTER
Today's Date: August 14, 2017

Steven P, Feinstein, Ph.D

To: William Markovits, Esquire
Copied to: Jason D. Frank, Esquire
Frank Volpe, Esquire
James Goldfarb, Esquire
Catherine Wigglesworth, Esquire
Adam Fotiades, Esquire
From: Darlene M. Coppola, CRR, RMR
Deposition of: STEVEN P. FEINSTEIN, PH.D.
Taken: August 14, 2017
Action: OPERS Vs. Freddie Mac, et al.

Enclosed is a copy of STEVEN P. FEINSTEIN, PH.D.'s deposition. Pursuant to the Rules of Civil Procedure, Dr. Feinstein has thirty days to sign the deposition from today's date.

Please have Dr. Feinstein sign the enclosed signature page. If there are any errors, please have him mark the page, line and error on the enclosed correction sheet. He should not mark the transcript itself. This addendum should be forwarded to all interested parties.

Thank you for your cooperation in this matter.

UNITED STATES DISTRICT COURT

Steven P, Feinstein, Ph.D
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

****

OHIO PUBLIC EMPLOYEES RETIREMENT SYSTEM, on Behalf of Itself and all Others Similarly Situated,
Plaintiff
vs. CA NO. 4:08-CV-00160
FEDERAL HOME LOAN MORTGAGE CORPORATION, a/k/a FREDDIE MAC, RICHARD F. SYRON, PATRICIA L. COOK, ANTHONY S. PISZEL and EUGENE M. MC QUADE,

Defendants

****

I, STEVEN P. FEINSTEIN, PH.D., say that I have read the foregoing deposition and hereby declare under penalty of perjury the foregoing is true and correct: (as prepared) (as corrected on errata.)

Executed this ______ day of ____________, 2017, at ____________, __________________________.

____

STEVEN P. FEINSTEIN, PH.D.

NAME OF CASE:
DATE OF DEPOSITION:
NAME OF WITNESS:
Reason Codes:
1. To clarify the record.
2. To conform to the facts.
3. To correct transcription errors.
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________
Page ______ Line ______ Reason ______
From ____________________ to ____________________

____